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Report on Forestry in American Samoa

by Colin Marshall

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REPORT ON FORESTRY IN AMERICAN SAMOA

by

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British Colonial Forest Service

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INTRODUCTION

This report has been prepared under the auspices of the Pacific Science Board of the National Research Council of the United States of America, and is due to the initiative of the Executive Secretary, Mr. Harold J. Coolidge, to whom the writer's grateful thanks are due. It was made possible by the kindness of Admiral Radford, U. S. Navy, financed through a grant from the Office of Naval Research, and with the kind assistance of the Governor of American Samoa, Captain Thomas F. Darden, U. S. Navy, and his staff. The writer's thanks are specially due to the Director of Agriculture, Mr. David H. Butchart, for his hospitality and indefatigable assistance which, together with his great interest in, and knowledge of tropical agriculture, and local conditions, made this report possible. To Mr. J. B. Menardi, the Resident Agriculturalist in charge of the Hawaiian Sugar Planters Experimental Station at Vialoatai, to numerous naval officers, and to the Agricultural Department staff and students, the writer expresses his sincere gratitude.

Owing to the shortage of the time available during the writer's two weeks of field work in the territory, much has been left for some future forester to investigate. The writer had, before coming to American Samoa, completed a month's survey of "Forestry in Western Samoa" for the Government of New Zealand, and recommends that the Report he prepared on that territory be read in conjunction with this. Certain Appendices will be found to be common to both reports.

In this report the writer has not confined himself to the consideration of the forests, but has embraced the full field of forestry in order to provide a plan for forestry development, which will be of practical use and interest to the Naval Officers, Administrators, Political Leaders of the Community and the Samoan people themselves in their advance towards a fuller, better life. In support of this approach the Report of the International Timber Conference of the Food and Agricultural Organization of the United Nations, held at Marianski Lanze, in Czechoslovakia in April-May, 1947, page 51, para 15 is quoted:- "The Conference recognizes that the world-wide shortage of timber cannot be solved within the limited framework of timber resources, cuttings, distribution and consumption, but depends to a very great extent upon the solutions of other economic problems amongst which are questions of finance, credit and means of payment, availability of transportation and labour, and interrelation with other commodities such as coal, and machinery. Conversely, development within the field of forest policies, and practices, and of the timber trade, influence the solution of other economic problems."

The report is set out in non-technical language, designed to enable experts in other fields to understand the problems. To professional foresters much of the argument and explanation will be redundant. The writer, however, feels strongly that forestry will never succeed when its benefits are given by officials however paternal, but only when the educated leaders of the community see the need for, and themselves earnestly desire, the introduction of forestry controls. The writer has ventured to label some practices, characteristics or acts of omission and commission

as undesirable, and hopes that it will be appreciated that such comments are offered in a spirit of friendly advice. The practical difficulties of developing an ideal system are fully appreciated, and the desire of all concerned to do what is best was very evident.

The writer apologizes for the many errors and omissions which he feels have been included in a report compiled after only two weeks in the territory. Appendices, which are in many cases the most important part of the report, have been included, both to show the sources of some of the figures and arguments used, and to give professional foresters the technical detail required.

The need for action is urgent. A certain, comparatively small, amount of damage has been done - irreparable damage unfortunately - but in general there is yet time to plan the future of the land scientifically. This report is not political. It gives the facts and laws of nature which, if disregarded by political leaders, will cause misery, starvation and the collapse of any political structure. If wise planned development, and wise land use is introduced the people of Samoa can raise their standards of living, and make their contribution to the happier world of the future.

FORESTRY IN AMERICAN SAMOA.

American Samoa consists of the tops of submerged mountains rising steeply out of the sea. There are few flat areas, and of the 38,400 acres of land area, only 10,000 is suitable for permanent agriculture. With very few exceptions all such areas are already under cultivation. There is another 10,000 acres of land which could be cultivated in perpetuity provided that proper soil conservation measures were adopted from the first, and the land returned after each agricultural food crop to a forest fallow. There is a further 18,400 acres of land, almost all still covered with forest, which must never be cleared for agriculture. If it is cleared, the heavy tropical rains will wash away the soil leaving bare rock.

The rainfall at Pagopago in 1950 was in January, 24.87 inches; in February, 37.80; in March, 30.04; in April 7.82; and in May, 39.06. Such tropical rains may fall at the rate of 8 inces in 20 minutes, (actually measured in Suva, Fiji). If they fall on bare rock, or bare soil, they rush straight downhill sweeping the fertile soil out to sea. When trees cover the land, their roots hold the soil, and, together with forest shrubs, keep the soil porous and spongy, able to take in the water, and let it flow underground, in myriads of small channels, to come out as springs of fresh, clear sweet water at the coastal villages. The absorptive capacity of land depends on the retention of deep soils, rich in humus, which is impossible without a good crop of vegetation, such as forest or heavy scrub.

No minerals of importance have been found in the territory, which

must rely upon the vegetative products of its land for both food for local consumption, and for export crops, to purchase the necessities of modern civilized life. Fishing on a commercial basis has been attempted by the South Sea Marine Products Ltd., which is reputed to have spent nearly a million dollars on investigation, and in attempts to establish the industry. It has, however, failed and the enterprise is now closing down. The coconut plantations produced an export crop in the year, 1948-49 which gave a net cash return of $320,000; a very small sum, quite insufficient to purchase abroad the goods normally imported. The sale of woven mats, curios, wooden carved articles, etc., even when carried out gratis by the Government, brought in a net return for eleven months of 1949, of only $2,313, enough to purchase one inexpensive motor car. It is clear therefore that these islands must increase their productivity to a very great extent, if the standard of living of the population is not to drop to the subsistence level, or if the islands are not to be permanently parasitic on the United States.

Though the United Nations experts consider that 2½ acres of cultivated land are necessary to produce a good livelihood for every man, woman, or child in temperate regions, this figure can be reduced in the tropics where heavy clothing, fuel for heating and substantial houses are not required. The Director of Agriculture estimates, and the writer agrees, that the 10,000 acres of arable land, and the 10,000 acres of "long-term-tree-fallow" shifting cultivation land can support a population of 25,000 at present standards. Any attempt to raise the standard of living or any increase in the population would necessitate more efficient, intensive cultivation, and the fullest scientific use of all land.

The population shows a most alarming increase from 5,679 in 1900, to 10,000 in 1930, 15,000 in 1943, and 18,602 in 1950, with a probable increase to the subsistence limit of 25,000 by 1958, and by 1970 a population of 40,000. Such a population increase will force the people, out of sheer necessity to cultivate all the sub-marginal tree fallow 10,000 acres again, and again to exhaustion, will make them cultivate the 18,400 acres of very steep forested slopes until the soil has been washed away, and the sea shore villages suffer from a water shortage. The end would be a semi-sterile island, from which the starving population would wish to emigrate to other lands which will, by then, have their own problems, and will refuse to accept immigrants. This national over-population problem, so familiar in the world today, must be faced by the local political leaders, and a solution must be found very soon. The prime necessity, now, today, is to plan for the wisest use and conservation of the full productive power of all land. Copies of "The Road to Survival" by Vogt, and of "This Plundered Planet" should be purchased, and distributed to schoolmasters and political leaders.

The future need not, however, be black, if the technical skills of the world are fully utilized. The writer advises the reader to study a book, "The Coming Age of Wood" by Egon Glessinger, the Secretary of the Forestry Branch of the Food and Agricultural Organization of the United Nations. Copies should be obtained and lent to the administrators and legislators of the territory. Briefly the book points out that, whereas coal was considered a useless black stone some 500 years ago, was considered useful only for burning 100 years ago, it is now the basis of a vast synthetic industry. Coal is only wood that has been buried for

millions of years, and has lost much of its substance in that time. The chemistry of freshly grown wood is just starting. Already wood, in addition to providing the fuel that cooks the food of two-thirds of mankind, and providing building material for a large proportion of all houses and furniture, also is the raw material from which is made all our paper, celluloid, cardboard, rayon, fibre-building boards, and many of our plastics. Germany made sugar, protein foods for humans and cattle, and many other substances from wood when she faced a shortage in the late war. How much more will the man of the future be able to both, feed and clothe himself from wood, from trees, the most efficient absorbers of the sun's energy. The full realization of this possibility must take many years, and for the present it is essential that agriculture and scientific land use planning should receive full attention.

American Samoa has been administrated by the U. S. Navy for half a century, as a naval station. The Samoan inhabitants have been given justice, law and order, and employment at very generous wages in the Naval establishment. Medical services have been established and have raised the standard of health, and greatly reduced the death rate, especially infant mortality. Education has received generous support. Quixotically perhaps, the United States did not organize, from amongst her Samoan wards, a battalion to fight beside the American troops in the war. Individual Samoans did, however, join the armed forces to fight for democracy, just as individual Samoans from Western Samoa, where a similar policy was in force, did go to New Zealand to join up. The Samoan people are advancing to partnership with, not freedom from, the United States. During the war not only were the Samoan people not conscripted, but they were not even taxed

more heavily. The United States in fact, taxed her own personnel and her own imports into Samoa, to such an extent that almost alone in the world Samoa has, not only no public debt, but actually a public credit of $1,208,356, and many Samoans now are receiving the G.I. education grant. These facts are not sufficiently appreciated either outside Samoa or within.

The writer was most disturbed however, to note that, as in Western Samoa, very little attention has been paid to and very little money has been spent on the department responsible for the production of the basic essentials of life - the Department of Agriculture. Nothing has been spent on Forestry. Various visiting and inspecting commissions have commented on political progress, educational advances, and increased medical services. The report of Mr. F. E. Midkiff of the Barstow Foundation notes the agricultural - forestry problem, but does not stress its fundamental importance. In the Annual Report by Departments for the year ending 30 June, 1949, Education covers 5 pages, Public Health covers 31 pages, while Agriculture comprises 3 pages!

An analysis of the net expenditure of all departments reveals a yet more undesirable state of affairs. In the 8 years, 1941 to 1949, Education spent $506,187; Public Health $462,576; and Public Works $336,522 while Agriculture spent only $21,755. In the year 1948-49, the departments of Education and Public Health had a net expenditure of $253,151, while the total income from Customs, the principal revenue producer was but, $250,494. During this same year, Public Works consumed $174,701, while Agriculture used only $1,946, approximately, one hundredth of the amount.

There is a great demand by local political leaders for the provision by the Public Works of all the amenities of life found in countries where the production per man-hour is far higher. The Barstow Foundation Report notes this tendency, and strongly advises against yielding to it. Further, that Report suggests that the accumulated surplus be formed into a Fund, and not handed immediately to the Legislative Assembly, but should be held until they gain experience. The writer heartily supports these views, and urges that in the future allocation of funds, it be recognized that "Before all else, Man must eat, Man must be housed."

The Naval Station at Pagopago should not be a liability to the United States of America, but a source of supply in an emergency. The forests of Pagopago cannot for many decades supply all the timber needs of the island. They can however, be of some use. They are not being used, other than sporadically by individual canoe builders and carpenters. There is no sawmill in the islands. At least one sawmill should be started with as little delay as possible. At present, sawn timber from Samoan species can be obtained only from Apia, Western Samoa. In the event of a war, an enemy submarine fleet would render the despatch of timber from Canada or the United States to Pagopago, a hazardous operation. At the same time ships, both Naval and mercantile, damaged by enemy action may need emergency repairs at Pagopago, and it may be necessary to build barracks ashore. Furthermore the Barstow Foundation Report notes the probable increased demand for timber to repair the large number of bungalow type frame houses, which the educated Samoan is erecting for himself in place of the traditional fale. Samoa will, when the Navy leaves not have the financial means to import the amount of sawn timber required. It must be cut and sawn, and grown again locally.

Local timbers are to a large extent unknown. There are some excellent timbers here as in Western Samoa, but they have been used unseasoned. Naturally they warp, twist and crack. The Public Works Department should start now laying in a stock of local timbers, even importing from Upolu for the purpose. This timber should be properly stacked, and seasoned according to the old tropical rule of "One year seasoning per inch of thickness." Once a mill is started in American Samoa, the Public Works Department should give it an annual firm order for a considerable proportion of its outturn of sawn timber, thus ensuring its financial stability.

A large number of tropical timbers are not used because they are unknown. The International Timber Conference of the F.A.O. referred to in the Introduction, noted that "The Conference considers that it is of prime importance to intensify research into the special properties of the numerous species of tropical timbers, and the range of suitable end uses." It is urged that the Agricultural Department collect timber specimens at least 6 feet long, by 7 inches wide, by 7 inches thick, and send them to the United States Forest Service Laboratories, at Madison, Ill. for test. It is essential that botanical identification material should be collected at the same time from the actual tree yielding the specimen timber. The identification could be authenticated by botanists at the University of Hawaii. It is recommended that close touch be kept with the Government of Western Samoa, and with the Forest Research and Training Centre, at Colo-i-Suva, Fiji, where parallel investigations are being initiated.

The writer does not consider that a departmental sawmill would be a financial success. Practically all land belongs to the Samoan tribes, and the inevitable bargaining, and compromises necessitated by the complicated

Samoan land ownership and land use customs, would be unworkable under Government bureaucratic control. It is probable that the sawyer would give the villagers some of the sawn timber as royalty.

If a private individual, preferably of Samoan or part-Samoan blood, would agree to purchase a mill on monthly repayment terms, the Government should consider purchasing such a portable mill, and power-plant and starting a "Forestry Working Funds Advance Account" for the purpose, similar to those Funds now in existence as the Copra Fund, People of Manu'a Fund, Samoan Industry Fund etc.

The large Christian Missions are now engaged almost exclusively in education and good works. In Apia, the Roman Catholic Mission runs a small wood-sawing and woodworking shop to supply its own needs, and to train its students as carpenters. Any mission which started a sawmill, portable, able to move from village to village as new land was cleared, would be doing much to raise the standing of living of the inhabitants. It would be no unusual thing for the Missions to engage in trade to assist their converts. In this case all the Samoan villagers need is an educated man to run the mill. The provision of funds would not present any difficulty in the case of a Mission. Funds are always readily forthcoming to build a new church. In Fagamalo, Savai'i, Western Samoa, the villagers who wished for a hospital, collected the money and local material, and erected the buildings themselves. Government supplied the imported material and the equipment. Such a spirit of communal endeavour exists in American Samoa. It may be only a matter of years before every large village, or every district may have its own sawmill. Naturally some of the labour would be sent to work in a sawmill at Apia, or elsewhere to gain experience before the mill were

erected. It is assumed that the Government Agricultural or Forest Officer would assist in technical advice, and in the erection of the mill.

The provision of a local supply of timber from the existing forests is important, but by comparison with the necessity for sound Land Use Planning it pales into insignificance. It is recommended most strongly that there should be set up, under the Chairmanship of either the Governor, or of his Chief Staff Officer, a Land Use Board, with the Director of Agriculture as Executive Secretary, and with the three principle local political leaders on the Board. The Director of Public Works and, when one is appointed, the Forest Officer should be also members. This Board would make arrangements to control the use of all land. It is naturally assumed that the excellent system of informing the Samoan public of the reasons for all decisions, through the newspaper O Le Fa'atonu,will be continued. In particular this Board will, in the manner described in paras 21, and 23, arrange for the retention of forest cover on the 18,400 acres of steep land referred to previously. Control of anti-erosion practices, and of reafforestation of the long term tree fallow, 10,000 acres would be jointly the responsibility of the Department of Agriculture, and of the Forest Service under the general direction of the Land Use Board.

Before this Board could function efficiently it will certainly require more detailed maps of the island. These maps would be a basis for the clarification of the land holdings, and would be land ownership maps. The term "land holdings" is used to describe land held "under Samoan Custom and Usage". There has never been any necessity, up to the present, to ascertain exactly what this means. The system organized and administered by the Samoans amongst themselves must be further clarified and

codified as Samoa advances into a modern economy. In Fiji, a Native Land Commission sat many years ago and determined, both on the map and on the ground, the boundaries of the particular parcels of land which each matai, there called matangali, or family-group, considered that it owned. The whole of Fiji was examined, and now the ownership of any and every piece of land is on official record. In Western Samoa the individual matai are not considered to own land, but to have the right of usage - the "usui fructus" - of all land owned by the "village community." In Western Samoa an attempt has been made to determine the boundaries of the various village lands. In American Samoa no such determination has been attempted, though the Samoans themselves recognize very definite boundaries. As a people the Samoans are extremely jealous of their rights over land. It is suggested that the Land Use Board when established, should appoint a Land Ownership and Demarcation Commission to determine the land over which each Matai has ownership or right of usage. The Government of Fiji, in conjunction with the Directorate of Colonial Surveys, London, England, has arranged for a complete aerial survey with ground controls to be made over all those islands next year. The Government of Western Samoa is considering such a step. It is suggested that while the planes and equipment are in these seas, the Government of American Samoa might employ them to carry out a survey of this territory.

It is recommended that, when the demarcation and delimitation of individual matai land holdings has been completed, the Government should

assume, for the benefit of the whole population, including those not living under the matai system, the ownership as "ultimus haeres" of land owned by any matai becoming extinct.

It would be inadvisable for many reasons for the Government to attempt to acquire for forestry purposes any land which, if left in private or communal ownership, would serve the national interests equally well. The writer devised in Fiji a formula that would leave forest land, or land to be afforested, in private ownership, and yet would vest the control in the hands of the expert Government technicians, while paying to the owner a fair rent, automatically adjusted to the fertility, and accessibility of the area. The "Forest Dedication Scheme" has been accepted, with very slight modifications, by the Forest Policy Committee of Fiji, and by the Government and the Legislative Council of Fiji. It is recommended for adoption in American Samoa.

The scheme anticipates that in the course of time Land Taxes will be introduced into these South Sea Islands, and that they together with Death Duties will threaten, as they do in Europe, the efficient sustained yield management of forests. It also assumes that it is undesirable for these islands, Fiji and Western Samoa, as well as American Samoa, to rely for the bulk of their revenue on Customs Duties which will inevitably decrease considerably when a recession of world trade occurs. For this reason it assumes that internal sources of revenue derived from local primary production for sale are justified, and that, therefore a tax on forest produce sold, or bartered should be introduced. The "Forest Dedication" Scheme is very simple. It permits the owner of land or of land to be afforested, to divest himself of the worry of management, and control

secure in the knowledge that he, and his descendants will be taxed only on the receipts from that land, and not on some arbitrarily fixed tax on the acreage of land.

The scheme works as follows: -

A. The Government by law constitutes a Forest Board empowered to hold land and funds, and to raise loans. The Chairman of the Forestry Board will be the Director of Forestry. The other members will be the Director of Agriculture, two members elected by the Owners of Land dedicated to forestry, two members elected by, and from, the Legislative Council, and two members elected by the Sawmill Owners or operators.

B. The owner of any land, be he, either a private individual, a matai, a village community, or the Government itself, may hand over to the Board to control and manage, according to the best forest sustained yield principles, or to reafforest whatever part of their land they may wish. Such land will then be legally constituted National Controlled Forest.

C. The Director of Forestry, as the Executive Officer of the Board, will, in National Controlled Forests, arrange for such felling, sale, re-planting, as he considers necessary. He will collect such royalties as are approved under law by the Legislative Council on such forest produce as may be cut and removed. He shall charge water authorities such rent as he considers proper, on areas of forest used for water catchment. At yearly intervals he will pay to all forest owners, one half of all sums collected on account of grazing or water fees, or forest products removed from their own land. The other half of the revenue will be paid in to a Forestry Fund controlled by the Forestry Board, and used for the management of the National Controlled Forest.

D. The Land Use Board shall have the power, when it considers that any land must, of necessity, in the vital interests of the people of Samoa, be kept under forest, instruct the owner of such land to "dedicate it to forestry" and hand over its control to the Forestry Board. If the owner refuses to take such action, the land may be compulsorily acquired by Government at an assessed valuation, and dedicated by Government to forestry.

The local inhabitants will have acquired certain rights over all areas of forest, either because of the generosity of Government or of the owner of the land, or because of long continued usage. These rights can not be extinguished by the dedication of the land to forestry. They must be preserved, and defined in the legal notification authorising the constitution of the area a National Controlled Forest. Such a schedule of rights must define with accuracy the limits within which the rights may be exercised, and shall be so worded that no rights, except those of communal land owners, shall increase with the increase in population nor shall any right be transferred or sold. These rights include the right to fish, or collect prawns, the right to hunt wild pigs, the right to collect firewood or housepoles, etc. No right shall be admitted which will make it impossible for the land to be managed scientifically for the production of the maximum outturn of forest products.

The International Timber Conference quoted before, was unable to reach a unanimous decision on the wording of its resolution on forest management and control. Nine votes were cast for:-

"The Conference recommends that the European governments take steps to control fellings, not only in forests under State control, but also in

private forests with the object of obtaining a sustained and, if possible, increased output." Five votes were cast for:-

"The International Timber Conference consider it desirable that participating governments should further consider the desirability of providing for proper management of their forest resources, whether public or privately owned." It is clear from the above that all delegates were in favour of controlling forest practices, in forests: both owned by the State or by individuals.

Though the forest owner will be liable to normal income tax on royalties he receives from his land, this does not solve the problem of Forest Taxation. Government should impose a tax on all forest produce cut for sale, and barter from all land whether National Controlled Forest, or Communal Land or Private Land. Any forest produce however, cut by the forest owner on, used on and not removed from, any particular piece of private or communal land, but not National Controlled Forest, shall however, be free of any tax. The rate of tax should vary according to the market value of the product. Approximately ten per cent is normal in British Tropical Colonies. At this rate the tax on firewood is $1. per cord, and on the best hardwood is $1. per 100 board feet. The rate should be approved by the Governor in Council before coming into force. British Malaya, which in 1900 imported timber from Canada, has built up its forests by wise investment of its money in forestry. In 1938, its expenditure on the Department of Forestry was approximately $ U.S. 1,250,000, and its revenue $ U.S. 2,400,000. It now exports to Australia, the Soudan, and China.

Before the people of Samoa can be expected to support a forestry program, they must have a demonstration area, a living example of the benefits of forestry, available locally for them to see. There is such an area available. It consists of the 1,517 acres comprising the airfield at Tafuna. The future of this land is now under consideration. One proposal is that the land, almost all of which is unsuitable for agriculture, should be given freely to the neighboring Samoan villagers. Such generous action would never be taken with an airfield in the United States. It is suggested by some that the airfield is not now necessary. The terminal buildings and equipment has been removed, and the airstrip landing lights all broken by mischievous locals. The writer has the temerity to suggest that at least until the political future of the world be absolutely clear, it would be advisable to retain the airfield land under Government control, and the actual airstrip in a usable condition. In order to do this it is suggested that the whole area be handed over to the proposed Forest Service of the Department of Agriculture to maintain, control and use. When the necessary laws have been promulgated, the land could be dedicated a National Controlled Forest, and the necessary rights of use reserved for the Naval Air Force.

This proposed Tafuna National Controlled Forest should be divided into compartments with, as boundaries, the aircraft dispersal roads now covering the area. The present, very poor tree crop should be felled to supply logs to the proposed sawmills. Each compartment should then be planted up with a different species, not only proved valuable Samoan species, but also exotics from areas with similar climatic characteristics.

The advice and assistance of the Divisional Forest Officer, Research and Training, Colo-i-Suva, Fiji; should be sought. Seedlings and seed might be obtained from that source. It is especially recommended that the seeds of both the large and small leaved mahogany be <u>not</u> obtained from Central America. The great pest of mahogany plantations is the shoot borer. Fiji is free of this pest, and so Fiji mahogany seed is safe. Any seed obtained should be fumigated, even at the cost of a reduced germination percentage. The following species are suggested as a start:-

Larged leaved Mahogany.	Swietenia macrophylla.	Seed from Fiji
Teak (The true Burmese teak.)	Tectona grandis.	Seed from N.Z. Rep.Estates, Apia.
Cigar box Cedar	Coedrella mexicana.	Seed from Central America.
Tamanu.	Calophyllum samoense.	Seed local.
Fetau.	Calophyllum inophyllum.	Seed local.
To'a.	Casuarina equesitifolia	Seed local; Sandy site.
Velau.	Casuarina nodiflora.	Seed from Fiji.
	Albizzia falcata.	Seed from Fiji, or Ceylon.
Borneo Camphor.	Dryobalanops aeromatica	Seed from Malaya.
Red luan.	Shorea leprosula.	Seed from Malaya.
Japanese Cedar.	Cryptomeria japonica.	Seedlings from New Zealand or Japan. It may not flourish.
Florida Slash Pine.	Pinus Caribea.	Seedlings and seed from Florida.

It is impossible to recommend the best source of seed, or the best local race, with only the meagre meteorological information available.

The writer recommends that the meteorological branch of the Government be strengthened, and that much fuller information be gathered, compiled and even publicized. Little use is made of the information at present available, and yet some most interesting results have been obtained by preparing graphs and collating data. It will be noted that during the years 1905 to 1912 the annual rainfall showed considerable amplitude of variation from 130 inches to 270 inches, and that this amplitude gradually diminished to the period 1921 to 1935, when the variation was from 176 inches to 226 inches, then the variation curve rose rapidly and appears to be a maximum at present. It appears therefore that there is a 33 year cycle starting with a steep rise to a period of maximum variation, and gradually falling to a period of minimum variation. We are now in a period of floods or droughts. These facts and figures are of the greatest importance to engineers calculating water supplies, to agriculturalists, and to foresters.

There are no maximum - minimum temperature records, wet-dry bulb humidity records, automatic recording combined thermometer hygrometer records, black-bulb thermometer records, sunshine recorders, Anemometers or all the normal series of meteorological instruments at any station excepting the one private station mentioned in paragraph 32.
The Government Station has a rain gauge, and that is all. When, during the war years of 1942 to 1946 rainfall records were recorded at the airfield, the Pagopago recordings were discontinued, thus spoiling a 40 year record of continuous measurement. It is suggested that two or three automatic recording rain gauges be included in any equipment ordered, so that the intensity of rainfall may be known and appropriate agricultural measures taken to prevent erosion.

There appears to be no wet or dry season in American Samoa, though July is on the average the driest month, when the humidity may drop to 53%. It is noteworthy that Pagopago may have over 65 inches of rain in one month. The figures obtainable do not represent true average conditions. Pagopago lies in the rainshadow of "The Rainmaker" or Mount Pioa. The South East winds saturated with moisture strike the Rainmaker, and sweep up its slope to over 1,600 feet, dropping over 4½ degrees in temperature. They thus reach the dewpoint and form clouds which drop their rain into Pagopago Bay giving an exaggerated rainfall. The Apia station on the other hand is situated at the end of a long sandspit at sea level on the dry lee side of Upolu Island, at a considerable distance from the hills. The wet South-East winds drop their moisture on the main ridge of the island and, falling to these lower levels, become hotter and drier thus providing unusually dry conditions.

It is recommended that the situation be examined by a visiting agricultural meteorologist, and that the necessary instruments be obtained and stations set up. As a start it is suggested that a rain gauge; a pair of max.-min. thermometers, and a pair of wet-dry bulb thermometers be set up at the following places:-

1) Reservoir, Pagopago, Tutuila Island.
2) Agricultural Dept. Farm, Taputimu, Tutuila Island.
3) Dispensary, Laone, Tutuila Island.
4) Dispensary, Amouli, Tutuila Island.
5) Dispensary, Tau, Manua Island.
6) Dispensary, Ofu, Manua Island.

The Hawaii Sugar Planters Association has a station at Vailoatai,

where Mr. Menardi, the Resident Agriculturalist keeps very full records. His figures show that humidity is always 100% at night, when the temperature is about 75° F., but on fine days, as the temperature starts to rise past 80° F. at about 0900 hours, the humidity starts to decline from 100% to an average minimum of 75% when the temperature reaches 90° F. at 1430 hours. Then the temperature falls, and the humidity rises until at 2200 hours the temperature has fallen to the dewpoint. The humidity has on occasions fallen to 53%.

The natural forests of the island are poor, and on the windward south side most of the trees on exposed ridges exhibit serious malformation caused by the wind. Practically all the accessible straight boled trees have been felled. Calophyllum samoense, called Tamanu is one of the best local semi-hard woods. It is used for construction and furniture, and is closely related to the Central American wood called "Santa Maria." It can be obtained in sawn form only from Apia. Ifilele which may, and probably does come from Intsia bijuga, the littoral species, and from another similar Intsia sp. found inland, is an excellent heavy construction timber. It is also used for carving kava bowls. The kava or tava tree, Pommetia pinnata, yields a good construction timber. Vau, Hibiscus tiliaceus, is a very decorative wood of small size. Fetau, Calophyllum inophyllum, an important littoral species yields an excellent finely figured furniture wood. Specimens of these and other woods were brought here from Apia.

Logging the local forests can never be an attractive commercial proposition, so long as American and Canadian lumber can enter the Territory freely, and so long as there is currency available to purchase that mass-produced lumber. It will, however be of advantage to the territory if

the Public Works Department would purchase, even at a high price, locally produced lumber. The use of electricity produced from imported oil should not be encouraged, as it is of great importance that firewood from the bent and twisted branches, and stems should find a market. When land is cleared for coconuts, it is especially important to remove all waste wood because that major pest on the coconut tree, the Rhinoceros beetle breeds in decaying logs. The best preventative measure is a clear, clean estate. The only way to persuade cultivators to clear all wood off the area is to make it saleable.

It is generally recognized that the cultivation of marginal lands and steep slopes results in erosion. It is also recognized that the richest soils giving the heaviest crops are found under forest. When the forest is felled and burnt the taro or other food crop will grow very well the first year, less well the second, and by the third or fourth year it will be a failure. The custom has therefore, grown up of cultivating land for one or two years, and then abandoning it to become covered again, first with creepers, then with shrubs and finally with trees. After a period of years during which the fertility of the land was restored, the operation was repeated. This system, wasteful in land, did not matter in the past when there were very few people on the island, and when there was plenty of land for each family. In those days too, the indigenous climbers and creepers did not continue growing vigorously for a long period, but weakened after a year or two, to be replaced by taller, and more deep-rooted shrubs and trees.

In these times, the "Fue sina", Mikania scandans, an introduced South American climber, soon covers cleared land, and continues to grow so vigorously that for very many years, not only is all shrubby or tree growth

prevented, but even vigorous trees on the edge of the clearing are smothered by its climbing mass of stems. On fairly flat or gently undulating true agricultural land this climber is welcomed, as it prevents the heavy wash of the rain from eroding the land, and also protects the living soil from the effects of harsh strong sunlight. If the "fue sina" is later cut and left on the ground between the rows of vegetables, as a mulch, it is wholely beneficial. The Director of Agriculture is to be congratulated on his success in planting the idea of mulching in the minds of the local peasants. On sub-marginal land however, the fue sina definitely prevents a regrowth of tree species during the tree fallow. It substitutes a creeper fallow for a tree fallow.

It is generally recognized that sloping land cleared after a fue or creeper fallow is not as fertile as forest land, and that after two or three clearings of fue a change occurs in the soil, and grasses appear. These grasses, when dry burn easily. After a few burnings the soil is definitely useless for agricultural root crops, such as taro. In Samoa, except for a small block near Vailele, on Upolu, this final stage has not been reached. The hills of the dry areas of Viti Levu, Fiji, near the Nadi airport however, are an example and a dire warning.

The main cause of this rapid loss of fertility in tropical soils appears to be associated with the loss of lime. Warm tropical rains passing through soil rich in rapidly decomposing organic matter, which is constantly giving out carbon dioxide, soon dissolves this gas and becomes a weak solution of carbonic acid. This acid attacks the small quantity of lime liberated from the decaying leaves, twigs, and trees forming a calcium bicarbonate solution. Under forest conditions this bicarbonate is

immediately reabsorbed into the roots of trees. Thus all available lime is either in the roots, stems, leaves or fallen and decaying leaves of trees. Yet the soil having a constant stream of lime passing through remains sweet and healthy, retaining the living structure which resists erosion.

If, on the other hand the forest is felled and the soil kept bare by clearing or burning for a period of some years, the lime normally in organic combination is quickly leached away to be lost <u>for ever</u>. The soil then becomes more acid, less able to retain its crumb structure, and finally can support a cover of only ferns or coarse grasses. Over a period of some fifty years, provided man does not, by burning, delay progress, these lowly colonies will have built up a sufficient stock of organic lime compounds, to enable more exacting plants to replace them. Finally after perhaps, three to five centuries the forest will return. This is technically known as an "ecological succession" and the forest crop as the "climax." The abandonment of cultivation to "fue-fallow" after a year or at most two would prevent heavy degrade, and a great loss of lime. It would enable the forest climax to be reached in a much shorter period.

The slow advance in the early stages of an ecological succession and the disadvantage of a "fue" fallow is that ferns, grasses and fue have very shallow root systems. They lack the deeply ramified root system of a tree which can act on rocks deep down in the subsoil, and replenish the lime deficiency more rapidly. The subsoil under trees is moreover disturbed and broken up, able to absorb and give free passage to rain water seeping down from the surface. This has been mentioned previously in paragraph 2.

It would be of great advantage, on the steep submarginal land now used for shifting cultivation with fue fallow, if a tree crop could follow directly after the taro root crop before much of the lime has been lost. It would be still better if the tree crop using the land during the fallow period could yield a cash return when it is felled for the next agricultural crop. These advantages are exactly what scientific forestry has to offer on submarginal steep lands which have been constituted National Controlled Forests.

The system has been used in Burma for many years to form those magnificent teak plantations, which are an example to the world. The system is very simple. The available forest is divided into the same number of blocks as there are years in the age of a mature tree. One block is felled by the logger who removes all mercantile lumber. The cultivators then fell the remaining small trees, and burn the area. They then plant their crops. Between the food crops plants, at 10 foot apart, they plant teak seedlings supplied to them by the Forest Ranger. They tend and weed the trees together with their own crop. Then next year or the year after, when the logger has cleared Block No. 2, and after they have reaped their food crop from Block No. I, they repeat the process in Block No. 2, leaving Block No. I covered with healthy growing young valuable trees. The Forest Ranger insepcts Block No. I, and provided that 90% of the young trees are thriving he pays the cultivator at a rate of - say $5. per acre.

If Samoan villagers dedicate their marginal and sub-marginal steep lands to be National Controlled Forests, reserving to themselves the right to cultivate a certain number of acres per year, they would obtain the

following benefits:-

A) They would obtain in perpetuity fertile land for shifting cultivation.

B) They would obtain as cultivators, a cash wage for planting and tending the tree seedlings.

C) They, as owners of dedicated land would receive a royalty on all lumber cut at the end of the rotation by the loggers.

D) They would obtain employment in the loggers labour force.

E) They would ensure that there was in Samoa a constant supply of local timber for themselves and their children.

The species grown would depend on the proportion between the area to be cultivated and the total area. A tree like Albizzia falcata, reaches large timber size in 15 years, Mahogany takes 80 years, while Ifilele would require 140 years.

There is another very serious erosion problem which is robbing the territory of some of its finest flat alluvial agricultural land. For thousands of years the mud and silt washed down from the hills in very small quantities by the forces of natural erosion, has been trapped by the roots of mangrove trees growing in crannies in the coral of the shore reef. The mud, protected by mangrove roots from tidal scour gradually built up until it came above high tide level, and the mangrove was ousted by dry land species which trapped silt from flood waters, still further raising the ground level. On certain areas of coast, littoral species such as Fetau, Calophyllum inophyllum; Vau, Hibiscus tiliaceus; Talie, Terminalia catappa; Futu, Barringtonia asiatica, and others, assisted by various creepers and shrubs, held the sand entangled

in their roots, and not only prevented scour, but also gradually built up more flat land. It is these small flat alluvial areas at the heads of the various bays that form some of the most valuable agricultural land in the territory.

In those far off days the Samoans were few in numbers, and lived in fear of raids by the Tongan sea-rovers. They lived and had their food gardens and villages hidden, in the folds of the hills. Then came the advent of Europeans, and the gradual end of wars and raids. The missionaries encouraged the hill-dwelling tribes to come down and settle on the coast. The mangrove fringe was cut down for firewood, and to get rid of the "smelly mangrove mud". Immediately the whole course of nature was altered. The waves, instead of bringing ever more mud to build more flat land on which food could be grown, now started to tear down in a few tens of years, valuable flat alluvial land that had taken tens of thousands of years to build. The littoral species too were cut down, and the sand was swept away, like the mud out to sea, to the deep water to be lost <u>for ever</u>.

Today along all the beaches, "nice clean open beaches" some would say, lie coconut trees, prostrate, their roots undermined by the hungry waves. All along the coastal roads, the people of Samoa have had to build sea-walls, which must be kept in constant repair, to withstand the waves. How much better would it be to have a living sea-wall of trees, not only to stop further aggression by the sea, but also gradually to recover more flat agricultural land, and further to supply a reasonable sustained yield of firewood and timber for ever. It is recommended that any felling or damaging by fire, or otherwise of any tree standing within a chain (33 feet)

of the high water mark spring tide, be made a crime. If the villagers could be induced to replant their coast it would be a triumph for the Public Information Officer, and the educational efforts of the Department of Agriculture.

It is hoped that when the Department of the Interior assumes control of these islands, and of other tropical overseas possessions and dependencies of the United States of America, it will gradually build up from the present agricultural officers, experienced in tropical conditions and in the unusual viewpoints and ways of native races, a cadre of permanent tropical agricultural officers, like the British Colonial Agricultural Service. The writer, who once visited the Philippines, has a great admiration for the high sense of duty and qualifications shown by the American officers of the quasi-colonial Philippine Forest Service.

It may be remarked that implementation of all the proposals put forward would be too costly for consideration. They are not costly, and only lack of time has prevented the writer from obtaining estimates of the expenditure involved. In any case the money granted would not be expenditure, but both investment which will pay for itself, and insurance against want in the future. The International Forestry Conference, 1947 recorded in regard to forestry development:-

"It is clear that in most countries the effort involved will demand a substantial capital investment, which could only give a substantial return after a long period. ... In certain cases the expected capital outlay may be too great to be provided from national financial resources alone. In view of the great importance attached to afforestation, and reafforestation, the Conference considers that the attention of the appropriate international organizations should be drawn to this considerable need."

In the Food and Agricultural Organization Conference of November-December, 1949; a resolution was passed that the International Bank for Reconstruction and Development should grant loans, to finance projects:-

A) To increase local food production.

B) To increase the external income of the country seeking assistance.

The Conference noted that "Natural resources are now finding that place in the consultations of governments to which this importance as the essential basis of life and wealth entitles them. Today the direct connection between the extent of available resources, and the number of people that the world can support with reasonable health and comfort is widely realized."

Today American Samoa is prosperous. Boom conditions prevail. The profits of the war years are still intact, the price of the staple and only export, copra, is high. The people both of American, and of New Zealand or Western Samoa have a surplus of wealth over and above their present needs. This surplus, and this financial strength should be used to build now, something that will be productive of income in the future. Electric light in the villages, numerous reinforced concrete churches, increased telephone services, or improved educational and medical facilities are excellent, but they produce nothing saleable, nothing to eat. The people do not realize the extent of the financial change that will come when the U.S. Navy leaves. The Fita Fita Guard salaries alone amount to $200,000 annually, and pay for many imports. Samoa has a hard road ahead of it before it can stand on its own feet after being supported by the Navy for half a century.

The local legislators should be given a chance to obtain the real education that only travel can give. They should be given practical demonstrations, and should be taken to see the mistakes that have been made in other lands, and to see what can be done with forests, and what real plantations and real sawmills look like. Unless the local people are heart and soul behind a national effort to make Samoa stand on her own feet, using her natural resources to the uttermost, all our efforts will be in vain. I suggest therefore, that two selected senior Agricultural students be sent to study for two years abroad; 18 months at the Forest Research and Training Centre, Colo-i-Suva, Fiji, to be followed by 6 months in the Forest School at Rotorua, New Zealand, specializing on forest engineering, surveying and road alignment, and in plantation work.

At the time when they are due to leave Colo-i-Suva for Rotorua, a party of some 20 leading Samoans should be sent to Fiji to examine the forest work, the erosion and land degradation now obvious in the Ba-Lautoka-Nadi area- and finally to visit the Colo-i-Suva plantations. The party should then accompany the students, who will have acted as guides explaining the significance of all they see, to New Zealand and be shown over the Rotorua-Kangaroa forests - the most extensive man-made forest in the world. The New Zealand Forest Service would be only too glad to assist.

This long Report and explanation can be ended only by congratulating the Government of American Samoa for calling in a technical officer for advice while there is yet time to save the land, to plan for a prosperous future based on a <u>Forest Policy for American Samoa</u>, which

should affirm that:-

"IT IS THE POLICY OF THE GOVERNMENT AND PEOPLE OF AMERICAN SAMOA TO CONTROL THE USE OF ALL NATURAL RESOURCES, AND IN PARTICULAR THE GROWING AND HARVESTING OF TREES, AND OF OTHER FOREST PRODUCTS, THAT THESE PRODUCTS OF THE LAND MAY MAKE AN ADEQUATE CONTRIBUTION BOTH TO THE GENERAL REVENUE OF THE COUNTRY AND TO THE OWNERS OF THE LAND ON WHICH THEY GROW; AT THE SAME TIME SO TO UTILIZE FORESTS AND THE KNOWLEDGE OF FORESTRY, NOT ONLY TO GUARD THE COUNTRY FROM THE DANGERS OF EROSION AND DESSICATION, BUT ALSO TO ENABLE AMERICAN SAMOA TO SUPPLY HER OWN NEEDS FOR TIMBER, AND TO MAKE A SUBSTANTIAL CONTRIBUTION TO THE SIMILAR NEEDS OF THE UNITED STATES OF AMERICA, OF THE OTHER SOUTH PACIFIC ISLANDS AND OF THE UNITED NATIONS OF THE WORLD, AND TO THIS END A SAMOAN FOREST SERVICE ADEQUATELY TRAINED, STAFFED, EQUIPPED AND FINANCED WILL NOW BE FORMED."

SUMMARY OF RECOMMENDATIONS

WITH COSTS.

SUMMARY OF RECOMMENDATIONS WITH COSTS.

The following Recommendations are made, and are listed in the order in which it is suggested that they should be implemented.

1. The Department of Agriculture should be greatly enlarged, and officered by permanent, experienced, qualified officers of the American Tropical Agricultural Service. Cost $50,000 annually.

2. The whole 1,517 acres of the Tafuna Airfield should be handed over to the Department of Agriculture, and slowly replanted with good tree species. Cost $3,000 per year.

3. Two senior Samoan Agricultural Students should be sent to Fiji for training in forestry. Cost: Salary part paid by Fiji for labour, part by Samoa. $250; Travelling $600.

4. A Land Use Board should be constituted by law.

5. A Land Ownership Commission should be set up. Cost of clerical assistance etc. $5,000 per year.

6. The Survey Department should be increased in size to carry out a survey of the land holdings in the islands. Cost $40,000.

7. The Public Works Department should start purchasing, storing for seasoning, and, in time, using lumber from Samoan species. Cost $10,000. Investment in stock $15,000 annually for 3 years only.

8. A) A demonstration sawmill should be set up attached to the local trade school. Cost $2,500. Cost of running covered by receipts.

B) Private, Communal or Mission enterprise should be stimulated to purchase, and operate a portable sawmill.

9. A Forestry Board should be constituted by law.

10. The felling of any tree within 33 feet of high water mark spring tide should be forbidden.

11. An experienced American Forestry Officer should be stationed in Pagopago, on a three year secondment to start the Samoan Forest Service. Cost $10,000 per year.

12. Twenty leading Samoans should be taken on a tour of Fiji, and New Zealand by the Forest Officer, accompanied by the Samoan Forest Students. Cost $10,000.

13. The Samoan Forest Service should continue in operation under the general direction of the Director of Agriculture, who will also hold the post of Director of Forestry.

14. Officers of the American Forest Service should be seconded at intervals to assist the local officers.

APPENDIX I.

DATA ON AMERICAN SAMOA.

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The United States territory of American Samoa was recognized a United States sphere of influence by the Treaty of Berlin, 1899. The chiefs of Tutuila and Aunuu ceded their islands to Commander B. F. Tilley, U. S. Navy, on 10th April, 1900, and the chiefs of Manu'a followed suit on 5th June, 1904. The President of the United States, Mr. McKinley issued an order to the U.S.Navy, to establish and maintain a United States Naval Station on the islands.

In the distant past the islands were colonized by early masterful Polynesian seafarers. So long ago, however was this, that there is no tradition here, as there is in other islands of their arrival from overseas. Sir Peter Buck records that after he had described early Polynesian migrations to a council of their chiefs, a spokesman thanked him for his interesting address, but stated that though the Polynesians may have come from the Asiatic Mainland, the people of Samoa had always been in Samoa, - the original Garden of Eden.

Jacob Roggevan sighted the islands in 1721. Laperouse landed in 1787, and numerous whalers from Scandinavia and New England made a practice of calling in for refreshments. The result of the inevitable introduction of European blood, both by these early visitors, and by more recent residents has produced a number of outstanding men.

In 1830, the famous missionary John Williams landed in Savai'i, Western Samoa, where he found several white men living with the Samoans. Within a few years the Samoans all adopted Christianity, and were going

as missionaries to other islands of the South Pacific. South Sea Missionaries of numerous denominations concern themselves with education, disseminating their beliefs and with good works. The Samoans have taken to such work with avidity and "Missionary" in a village means the local Samoan pastor, who automatically is regarded as of "chiefly rank." There is little interdenominational bitterness, but there is rivalry which shows itself in the erection of more, and bigger churches in every village. The numerous reinforced concrete churches arising everywhere in villages of wooden grass thatched "fales" is evident of the hold the respected religious teachers have on men's minds in Samoa. This side of Samoan life has been stressed because it forms the basis of a recommendation in the main report.

The islands of American Samoa consist of all the Samoan Group between 168° and 171° West and between 14° and 15° South. Swain's island, which is now included in the group lies far to the North at 170° 32' West, and 11° 30' South. The distance between Tutuila, and Apia in Western Samoa is 70 miles. The group consists of Tutuila, with an area of 40 square miles; Tau of 14 square miles; Ofu, Olosega, and Aunuu of 2 square miles each, and the small uninhabited double island-Rose Island. The total area is 60 square miles, 155 square kilometers, or 38,400 acres. Of this approximately 10,000 acres is suitable for permanent arable farming, another 10,000 acres can be used for controlled shifting cultivation, with long term tree, or creeper, fallow, and 18,400 acres must be kept under a tree crop.

Tutuila is the top of the submerged mountain ridge, which forms the backbone of the island, and varies in height from 1,000 to 1,600 feet, but rising in Matafao to 2,141 feet. Pago Pago Harbour is a fiord formed

by a deep valley. The islands show signs of intense volcanic action in the near past, but no activity is noticeable now. In many areas disintegration of the volcanic lava, scoria and ash has not yet produced a workable depth of soil.

Almost all Americans and other white temporary residents live in Pagopago. A few U. S. Navy personnel have however, retired to the island, and married Samoan women.

APPENDIX II.

(A) INDEX OF FLORA.

(B) DETAILED DESCRIPTION OF CERTAIN SPECIES WITH RATES OF GROWTH.

APPENDIX II. (A)

Index of Flora.

TREES, SHRUBS AND PLANTS OF SPECIAL INTEREST TO FORESTRY.

AUTHORITY.

1. Reports received personally by the author from local natives and residents. Owing to pressure of work during a short visit, botanical identification by inspection only or assumed correct.

2. Samoan and Scientific Names of Plants Found in Samoa.
Compiled April, 1935, by E. H. Bryan Jr., Curator of Collections, Bernice P. Bishop Museum, for the Governor of American Samoa. From:-

a) F. Reinecke, Die Flora der Samoa-Inseln. Engler's Botanischen Jahrbüchern.

b) William Albert Setchell, American Samoa.
Part 1. Vegetation of Tutuila Island.
Part 2. Ethnobotany of the Samoans.
Part 3. Vegetation of Rose Atoll.
Carnegie Institution of Washington, Department of Marine Biology, Vo. xx 275 pp., 37 pl., 57 figs., June, 1924.

c) C. G. Lloyd and Walter H. Aitken, Flora of Samoa. Bulletins of the Lloyd Library....Cincinnati, Ohio. Botany Series No. 4, Bulletin No. 33, 113 pp. numerous illustrations, 1934.

d) Erling Christophersen; Flowering Plants of Samoa. B. P. Bishop Museum, Bulletin 128, 221 pp. 32 figs., Feb. 21, 1935.

3. Fijian Plant Names, by B.E.V. Parham, M.A., Department of Agriculture, Fiji, 1942.

4. Dictionary of Economic Products of the Malay Peninsular by I.H.Burkill, M.A., F.L.S., Director of Gardens, Singapore and Straits Settlements. 1935.

5. Tropical Planting and Gardening by H. F. Macmillan, F.L.S., V.H.R.H.S., Superintendent Royal Botanical Gardens, Ceylon.

TREES, SHRUBS AND PLANTS OF SPECIAL INTEREST TO FORESTRY RECORDED IN SAMOA OR FIJI.

Scientific Name.	Samoan Names. (2) unless otherwise noted.	Fijian Names. (3) unless otherwise stated.	Description. Tree.	Wood.
PINACEAE or PINE FAMILY				
Agathis vitiensis, Benth & Hook. (Syn.Dammara vitiensis, Seem.)	-	Idakau Makandre	The Fiji Kauri; large tree, dominant in untouched hill forest. 1,000-3,000 ft. Mean Annual Increment ½ 1.2 inches girth, 1.2 feet height. Cylindrical bole 50' clear and up to 24' in girth.	Whitish yellow, strong, easily worked. Equal to N.Z. Kauri. Distinct heartwood. One of the world's best coniferous timbers.
TAXACEAE or YEW FAMILY.				
Dacrydium elatum, Wall. (Syn.Dacrydium lycopodioides, Bronga et Gris.)	-	Yaka, Tangitangi (rare) Thaukalou (rare)	Tall tree of untouched forest, leaves feathery in youth; mature are like cryptomeria. Straight bole up to 20' girth. Always in association with casuarina nodiflora. Light demander.	Hard, heavy light brown furniture timber streaked with dark brown. Highly valued. Similar to N.Z. Rimu, but more handsomely marked.

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
TAXACEAE or YEW FAMILY continued				
Podocarpus affinis, Seem.	-	Kuasi, Kasi (rare) Mbaukiuanga (rare)	Medium sized tree, occasionally large, not common. Maximum girth 6'. Bole clear 30 ft.	Yellow, close grained heavy durable wood.
Podocarpus javanicus, (Burm) Merrill. (Syn.Podocarpus cupressina, R. Brown.)	-	Amunu,Kausola(rare) Kautanbua	Medium tree, regeneration profuse, fine leaves arranged along both sides of the twigs. Found 1,000 to 3,000 ft. Straight bole,clear to 50 ft. girth up to 10 ft. Propagated by frugivorous birds.	Yellow, close grained wood; suitable for butter boxes. Akin to N.Z. White Pine.
Podocarpus neriifolius, Don. (Syn.Podocarpus bractiolata, Bl.)	-	Ngangali	Small tree. Found on banks of streams.	Wood of little importance, but said to be very elastic.
Podocarpus vitiensis, Seem.		Salusalu, Ndakau-salusalu	Large tree, leaves 1" long by 1/3" wide, lanceolate, pointed, stiff. Trees numerous, seedlings widely distributed, seed eaten by frugivorous birds. Straight bole up to 44' in girth, with a clear bole of over 50 feet.	Wood very similar to Agathis vitiensis.Light golden brown, strong, hardens on seasoning. Makes good shingles.

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
GNETACEAE or CONIFEROUS LIKE TREES WITHOUT RESIN, BUT WITH VESSELS IN THE WOOD.				
Gnestum gnemon var. sylvestris, Linn.		Sikau, Sukau, Sukaumbuli, Sukau Motu	Small slender tree, jointed branches, catkin like inflorescences. Flowers November; edible fruits.	Wood not used.
GRAMINEAE or GRASSES FAMILY				
Bambusa sp.	'Ofe fiti, Lau-niu	Bitu Vatu, Bitu Kau	Bamboos.	
Paspaslum conjugatum	Vailima	-	The introduced broadleaved "Hilo grass" of Hawaii.	
PALMAE or PALM FAMILY.				
Balaka filiferum, (H. .Wendl.) Burr.	-	Niuniu, Nesi Thangithangi		
Balaka seemanii, (H.Wendl.) Burr.	-	Mbalaka, Mbalako		
Balaka sp.	Manuinui, Niu-vao		Palms.	
Clinostigma sp.	Niu vao	-	A forest palm.	
Cocos nucifera	'Ini-ini	Niu,Niundina, Niumbundrau	Coconut palm, small thin shelled nuts.	
Cococ nucifera	La'ita		Small coconut palm; small yellowish fruits.	
	Niu		General term for coconuts.	
	Tongau		Variety of coconut.	

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PALMAE or PALM FAMILY continued				
Cocos sp.	Niu-nikini		Ornamental, non edible introduced coconut.	
Metroxylon vitiensis, Herm, Wendl.	-	Songo	The Sago palm.	
Pritchardia pacifica, Seem.	Niu piu	Niumasei,Niusakiki, Viu,Masai,Sakiki	The smooth trunked "Fiji" fan palm.	
FLAGELLARIACEAE.				
Flagellaria gigantis	Lafo		Reed, climbing, used like rattan cane of S.E.Asia for cordage.	
Flagellaria indica, Linn.	-	Ngato, Walaki, Wasila	Reed, climbing, used like rattan cane of S.E.Asia for cordage. Medicinal Hyrocynic acid in plant. Hair wash from leaves, and fruit.	
Flagellaria sp.	-	Nganua,Walaki, Wame, Waulo		
LILIACEAE or LILY FAMILY.				
Allium ascolonicum, L.		Varasa	The cultivated onion.	
Collospermum samoense (Syn.Astelia montana.)	Sala-sala Tua-fanga	Misi, Misimisi	Epiphytic herb commonly found climbing up forest trees. Pandanus like leaves.	
Asparagus officinalis			The true asparagus.	

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
LILIACEAE or LILY FAMILY continued				
Asparagus plumosus Baker.	Lau-lili'i		The Asparagus fern.	
Cordyline jacquinii, Kunth. (Syn.Taetsia jacquinii.)		Tikula	Shrub.	
Cordyline sepiaria, Seem.		Vasilikau,Tikula	Cultivated ornamental shrub.	
Cordyline fruticosa, Goeppert. (Syn.Cordyline terminalis, Kunth.)	Ti, Ti fanua, Ti tonga(Red petioles) Ti tongatonga (r. leaves) Ti uea (Narrow r.leaves) Ti'ula (Ornamental r. leaves) Ti uli (Undersides of leaves, red) Ti vao (Forest variety, Green leaves)	Masawe,Nggai,Ti Vasilindamu, Vasilitonga, Yakota	Ornamental shrub;Leaves vary greatly in color. Red leaved ones inimical to evil spirits, and therefore planted in graveyards, and at four corners of a house. The leaves are used for a skirt in Hawaii, and for decoration of houses in Samoa.	
Cordyline sp.		Lolokula, Vasilingio	Shrub.	
Dionella ensifolia, Nad.		Varavara	Grass like herb.	
Geitonoplesium cymosum, A. Gunn.		Naveavea	Shrubby climber.	

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
LILIACEAE or LILY FAMILY continued				
Pleiosmilax vitiensis, Seem.		Kandrangi, Suthumaikaka, Takataka, Warusi	Shrubby climber.	
CASUARINACEAE or SHE-OAK FAMILY.				
Casuarina equisetifolia, Forst.	To'a	Nokonoko, Nggaro, Nakure	Feathery "leaves", light foliage, slender green twigs, seven sided. Dry zone tree growing on eroded semi-sterile hills swept by fires or on open beaches. Girth 4 feet; Height 50 ft. Rapid growth. This species has a symbiotic nitrogen-fixing fungus around its roots, and like legumes, enrich the soil and can colonise very poor land.	Ironwood, Beefwood, Queensland Swamp Oak; Wood hard, heartwood fairly durable if from female tree, but not if from tree with male and female flowers. Very good firewood; Splits well. Tan-bark.
Casuarina nodiflora, Forst.		Velau, Thau, Thaukuro, Kuthau	Denser foliage, twigs four sided. Grows in dense rain forest. Often has stilt roots and buttresses. Ornamental shape. Girth 6 feet; Height 90 feet.	Strong very heavy wood, used for axe handles. Close grained. Like casuarina equisetifolia, could be used for paving blocks.
PIPERACEAE or PEPPER FAMILY.				
Piper aduncum, Linn.		Yangona ni Onolulu.	Introduced shrub.	

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PIPERACEAE or PEPPER FAMILY, continued.				
Piper insectifugum, Casin.		Wangawa, Wangangawa.	Root climber.	
Piper latifolium, Forst.		Yangona, Meriseri	Shrub.	
Piper macgillivrayi, Casin.	'Ava-atua	Yangoyangona	Shrub with long catkins.	
Piper methysticum, Forst.	'Ava	Yangona, Kava	Cultivated shrub, kava made from root.	
Piper tutuilae	'Ava- 'ava-aitu		Epiphyte on coconut palms; leaves chewed, and applied to Yaws.	
Peperomia		Recorded, but not named.		
Peperomia pallida	La'au-solosolo-i-le-ma'a, Vao-sosolo-i-le-ma'a		Climbing succulent herb.	
CHIORANTHACEAE.				
Ascarina lanceolata, Hook,f.	Fiti, Tonga-vao	Langolango	Common tall tree.	
BIGNONIACEAE.				
Spathodea companulata, Beauv.	-	-	The African Tulip tree. Flowers freely, especially in October. Red showy flowers. Fast growing.	Wood white, weak and brittle. Possibly usable for paper.

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
MONIMIACEAE.				
Hedycarya denticulata	La'au-fai-vaitusi		Small tree, "ink berry."	
PASSIFIORACEAE or PASSION FRUIT FAMILY.				
Passiflora edulis, Sims, & Passiflora laurifolia, Linn)			The cultivated passion fruit vine.	
Passiflora quadrongularis, var.macrocarpa, Linn.			The cultivated grenadilla vine.	
Passiflora samoensis	Passio-vao		Passion flower vine; Conspicuous purple and white stamens. Found wild near Vailima, Apia.	
OLMACEAE or ELM FAMILY.				
Girroniera celtidifolia, Gaud.	-	Masivau, Nunu, Sisita, Sisisi, Sirisiri	Small tree, very common in underwood in wet localities. Cut for stakes. Shadebearer; Regenerates freely. Leaves 3 nerved at base.	Timber inferior, possibly useful for paper making.
Parasponia andersonii, Planch.	-	Ndrou		
Trema amboinensis, Blume. (Syn. Trema virgata, (Blume)	-	Ndro, Ndrou, Ndroundrou	Shrub, early coloniser of cleared land.	

Scientific name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
OLMACEAE or ELM FAMILY.				
Trema orientalis, Blume.	Fau-songa		Small tree in lowlands and foothills. Found from the Himalayas to the Pacific. Birds eat the seeds, and deposit them in their droppings. Early coloniser of cleared land, rapid growth, light demander.	Timber yellowish white, soft, does not split on drying. Its charcoal is very good for gunpowder.
MORACEAE or MULBERRY and FIG FAMILY.				
Antiaris bennettii, Seem.	-	Mavunitonga	Tree yielding a bark-cloth.	Wood soft and white, with even grain.
Antiaris toxicaria, Leschenault.	-	--	The "Ipoh" or "Upas" poison tree.	Wood white, and soft. Not used. Latex yields a dart poison.
Artocarpus communis, Forst. (Syn.Artocarpus incisa, Linn.)	Asina,Aveloloa, Ulu (Plus suffix and numerous other names.	Kulu, Uto	The breadfruit tree of the Pacific, being carried on the "Bounty". "Wild" races are not seedless. Latex used for chewing gum.	Medium, hard reddish yellow wood. Resists white ants. Latex used for caulking boats. Bark fibrous, forms cloth or cordage, but rarely used.
Artocarpus integer, Merr. (Syn.Artocarpus integerifolis, Linn.)	-	Uto ni India	Jack Fruit Tree. Fruit sometimes over 100 lbs. in weight. Leaves, latex, and "vegetable bezoar stones" medicinal.	Timber valuable. Sapwood pale heartwood bright yellow, darkening on exposure. Boiled chips yield yellow dye,

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MORACEAE or MULBERRY and FIG FAMILY continued				
				Moria; excellent for silk. Used for Buddhists' robes.
Broussonetia papyrifera, Vent.	U'a	Ai Masi, Malo	Paper mulberry, bark beaten into Siapo or tapa cloth. Medium sized slender tree. Scarbid palmate leaves, 3-5 lobed.	
Ficus benjamina, L.	-	-	Introduced "Weeping Fig," popular as a shade tree.	
Ficus elastica, Roxb.	-	-	Introduced India-rubber tree, large banyan form.	
Ficus graeffii	Aoa		Large banyan form of fig tree.	
Ficus obliqua, Forst.		Moaka	Forest tree, epiphytic on others, finally killing its host, and becoming self-supporting. Grey bark. Roots are thrown out by the stem and branches.	Timber white, soft and rough.
Ficus scabra, Forst.	Mati	Ai Masai	Large tree with descending aerial roots.	
Ficus tinctoria, Forst.	Mati	Moaka,Nunu	Coastal fig tree.	
Ficus sp.	-	Masai tambua	Small tree of rain forest.	

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URTICACEAE or NETTLE FAMILY.				
Castilloa elastica	Pulu-vao		Tall quick growing tree in secondary forest. Introduced from Central America. Large oval coarse leaves alternate up to 15" long by 6" wide; Leaf edges finely serrate. Young shoots covered with fine hairs. Latex does not flow well in the cut. Regeneration prolific in open areas.	Wood white, and soft.
Cypholophus macrocephalus, Weddel.	Fau-pata	Rere	Shrub.	Valuable bast fibre.
Fleurya interrupta, Gaud.	(Vao)-mangeso, Ongo-ongo	Salato ni Koro	A nettle, common weed.	
Laportea harveyi, Seem.	-	Salato	The giant nettle tree, not common in Fiji.	
Laportea photinophylla	Salato	-	Large tree, numerous in secondary forest. Cordate leaves have distinctive red veins, and cause painful stings; Relieved by rubbing with the bark of the tree, or with a lime.	Very soft white wood. Not used.
Leucosyke corymbulosa, Wedd.	Al-ala-toa, Lalatoa	Ndraningata, Karokarokuro etc.	Shrub or small tree of foothills.	Used for canoe parts.
Pipturus argenteus	(Fau) Songa	-	Small tree. Mucilagenous stem chopped up for a hair wash to get rid of lice.	Bast fibre for cords of great strength for fishing nets. Wood

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URTICACEAE or NETTLE FAMILY continued.				
				not used.
SANTALACEAE or SANDALWOOD FAMILY.				
Santalum yasi, Seem.	-	Yasi, Yasi Ndina Yasi Boi	The famous Fijian sandalwood. Small tree said to be almost parasite, probably on Afzilia bijuga or Erythrina indica- both of the Leguminosae. Bark grey, fissured. Leaves small, opposite shining forming a light crown. Grows in scrub forest in the dry zones; Succulent drupes eaten by birds which distribute the seed. Best reproduced artificially by dibbling in scrub.	Sapwood white and scentless, heartwood yellowish brown, hard, oily, strongly scented.
OLACEAE or OLIVE FAMILY.				
Jasminum didymum	Fue-fue,Fue-malo		Woody vine; littoral.	
Jasminum sanbac	Pua-solo-solo		Introduced white intensely scented flowered vine. Used for scenting coconut oil. Medicinal.	Buds some time added to tea.
Ximenia americana	Moli tai		Sea shore shrub or small tree. "Tallow wood". The "Hog plum" is the edible acid fruit. Nuts purgative.	Timber hard, pleasantly scented when fresh; rather heavy, light brown to yellowish red. Sometimes

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	OLACEAE or OLIVE FAMILY continued			
				powered as "sandalwood".
Ximenia elliptica, Forst.		Misimisi,Sosomi, Tomitomi	Sea-shore shrub.	Probably similar to Ximenia americana.
	LORANTHUS or MISTLETOE FAMILY.			
Loranthus insularam, R.Br. (insularus?)	Aoa-ifi, Tapuna	Mbuandatokaikou, Mbuatoka,Sumburu, Lewandomundomu	Parasitic shrub on Incarpus edulis, (Ifi.)	Contains tannin. Medicinal.
Viscum articulatum, Burm.	-	Kambikambi	Parasitic shrub. Fiji mistletoe.	
	NYCTAGINACEAE.			
Boerhaavia diffusa,L. Commonweed.	'Ufi, 'Ufi-soi	Recorded, but not named.	Common shore plant, underground stems edible.	
Mirabilis jalapa, L.	Peteli	Lalawavu;Lalivau, Laweivou,Rongolali	Herbaceous weed.	
Pisonia excelsa, (Syn.Ceodes excelsa, (Blume) Skottsberg)	Recorded, but not named.	-	Small tree.	
Pisonia grandis, (Syn.Ceodes grandis.)	Pua-vai		Soft wooded tree on Rose atoll.	
Pisonia inermis,Forst & P. (Syn.Pisonia umbellifera, Seem.)		Recorded, but not named.	Tree.	

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NYCTAGINACEAE, continued				
Pisonia sp. (Syn.Ceodes sp.)	Taipoipo		Large soft-wooded tree on Savai'i.	
ANNONACEAE or SOURSOP FAMILY.				
Annona murecata, Linn.	Sasalapa	Seremaia	The Soursop tree; the fruit is anti-scorbutic. Cuttings take.	Wood not used.
Annona reticulata, Linn.	-	-	The custard apple tree.	Wood not used.
Artabotrys uncinatus	Moso'oi		Ylangylang or Macassar oil shrub of Honolulu, cultivated for its flowers. Fruit like berry. Climber; Bark contains poisonous alkaloid.	Fishing lines made from bark.
Canangium odoratum, King.	Moso'oi	Makosoi	Common tall tree, straight trunk. Fragrant light yellow flowers for scenting oil. Lowlands.	Wood for canoes. Extract of flowers sell very well for scent abroad, known as "Ylangylang" or Macassar oil, (Makosoi oil?) Wood will not burn; therefore useless for firewood.
Cyanthocalyx vitiensis, A.C.S.	-	Mako,Wainunu	Common tree in lowland forest.	Very light soft wood. The lae insect will feed on the tree.
Fissistigma sericeum,A.C.S.	-	Tondo	Tree ? or climber.	

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MYRISTICACEAE or NUTMEG FAMILY.				
Myristica castanaefolia, A. Gray.	-	Kaundamu, Mali	Branches leave the stem like spokes of a wheel, i.e. verticillate. Fruit an inferior nutmeg. Leaves green on both sides alternate. Shade bearer. Regeneration good. Tree of lowlands. Up to 70 ft. high, 5 ft. girth.	Light, reddish medium hard wood used for banana cases. Works easily.
Myristica fragrans, Linn.	-	-	The cultivated nutmeg. Medium sized tree of the Moluccas Islands.	Timber not used.
Myristica grandiflora, A. Gray	-	Mavota	Tree of lowlands. Similar to Measturaefolia, but leaves larger and white underneath. Less common.	Timber better than Kaundamu. A good cabinet wood.
Myristica gillespiana, A. Smith		Male	Tree.	
Myristica hypargyaea	Atone- 'ula		Medium sized nutmeg tree of lowlands.	
Myristica inutilis	Atone, (atonge)		Medium sized nutmeg tree of lowlands. Develops stilt roots when it passes pole size.	Poles used for house posts.
Myristica sp.	-	Recorded, but not named.	Tall tree of high hills, fluted bole. Attacked when standing by wood borers.	Wood said to be good for canoes.

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LAURACEAE or LAUREL FAMILY.				
Cassytha filiformis, Linn.	-	Walutumailangi	Parasite. Appears to be a tangle of green string growing on the leaves of a variety of plants, generally low seashore herbs. Attacks nutmeg. Medicinal.	
Cinnamomum camphora	-	-	The camphor laurel of Formosa.	Timber excellent for furniture as it repels insects.
Cinnamomum zylanicum Breyn (Syn? Cinnamomum pallidum)	Tingamoni	-	Cinnamon tree leaves strong odor when crushed, escaped from cultivation; bark used to scent coconut oil.	Wood not used.
Cinnamomum pedatinaervium, Meisn.		Mathouvu	Small mountain tree. Bark aromatic, contains safrol used to scent coconut oil. Maximum girth 4 feet.	Timber whitish soft. Smells of aniseed even when the wood is absolutely rotten. Used to scent coconut oil.
Cryptocarya sp.	-	Ndrausasa, Ndrasasa	Small tree with aromatic bark.	Timber not commercial, but hard, and can be used for house posts.
Endiandra elaeocarpa	Asi,(Asi-wai?)		Tall tree of middle and lower forest.	Medium strong wood, not very durable.
Endiandra luteola, A.C.Smith		Ngelengai	Tree.	

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LAURACEAE or LAUREL FAMILY continued				
Litsaea pickeringii, A.Gray.		Malomalo, Matandavo Singa	Tree.	Greyish wood.
Litsaea sp.	Papaono	Lindi,Mundari	Large tree of lower forests.	Greyish wood.
Persea americana, (Syn.Persea gratissima, Gaertn. F.)	Aviota	-	Cultivated avocado pear tree from Mexico.	Timber light reddish brown; firm in texture, easy to work; 40 lb. per cu.ft.
HERNANDIACEAE or HERNANDIA FAMILY.				
Gyrocarpus jacquinii, Roxb. & Gaertn.)		Wiriwiri	Large littoral tree, fruit 2 winged.	Very soft white wood. Can not be used for firewood, as it will not "burn." Preferred above all for catamarans in Ceylon.
Hernandia moerenhoutiana Pipi		-	Large tree, fruit yields scent for oil.	Used for canoes.
Hernandia ovigera	Pu'a	-	Common large littoral tree, peltate leaves.	
Hernandia olivacea,Gill.	-	Wasauli	Tree.	
Hernandia peltate, Meisn. (Syn.Hernandia sonora,Linn.)	-	Yevuyevu,Evuevu	Large littoral tree, short stem. Seeds contain so much, 51% oil, that they often take the place of candle nuts. Red brown inedible. If the juice is	Heartwood at base of trunk is black. Wood soft, light in weight, grey in colour. Used sometimes for canoes, but rots easily.

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HERNANDIACEAE or HERNANDIA FAMILY continued				
			rubbed on the skin it removes the hair. Oil and leaves purgative.	
PITTOSPORACEAE or PITTOSPORUM FAMILY.				
Pittosporum arboreum		Nduva, Savu, Tinathevau	Tree, leaves and fruit used as fish poison and medicinally.	Wood white, fine grained.. Not durable.
Pittosporum brackenridgei, A. Gray.		Mbau	Probably similar.	Probably similar.
Pittosporum pickeringii		Tandiri	" "	" "
Pittosporum richii		Tandiri	" "	" "
Pittosporum rhytidocarpum		Vothevothenithangi	" "	" "
GUNONIACEAE.				
Geissois ternata, A.Gray.		Vota,Vure,Vunga	Tree.	
Spiranthemum katakata, Seem.	-	Katakata	Small tree.	
Spiranthemum parkaii,Gill.		Tandalo	Shrub.	
Spiranthemum samoense	Lau-natua Saitama		Small tree.	
Weinmannia namawi,A.Gray.		Manawi))	Shrubs: Some times considered to belong to the Saxifragaceae.	Wood of Weinmannia blumei of Sumatra is fairly hard, easy to

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	GUNONIACEAE continued			
Weinmannia rhodogyne, Gibbs.		Nggalo))	Bark of some species yield red dye, also medicinal.	work, red with a satiny lustre.
Weinmannia vitiensis, Seem.		Molaundamu))		
	ROSACEAE or ROSE FAMILY.			
Parinarium insularum, A.Gray.	Se'a, Sea	Sa	Large tree, up to 8 feet girth; lower hills forest. Cultivated and wild.	Timber hard, difficult to work. Durable, probably good for piling in the sea.
Parinarium glaberrinum, Hasskarl. (Syn. Parinarium laurinum, A. Gray.)	Ififi, Ifiifi		Small tree, fruits for scenting oil. Cultivated and wild.	Timber hard, very heavy. Not durable in contact with the ground.
Parinarium sp.	-	Makitalika, Makitasalusalu	Trees. Fruit sometimes edible.	
Rubus tiliaceus	-	Wangandongandro Wavuka	One of the blackberry and raspberry genus, a prickly scandant shrub the "Wild raspberry," fruit small, but edible. Medicinal.	A nuisance in sylvicultural operations.
	LEGUMINOSAE or PEA and BEAN FAMILY.			
Abrus precatorius, Linn.	Fue-fue lauli'i, Matamata-moso	Ndirindamu, Lele Lerendamu	Long slender, slightly woody vine, littoral; poisonous, very hard red seeds used for necklaces,	Roots and especially the leaves contain glycyrrhizin, the active principle of

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LEGUMINOSAE or PEA and BEAN FAMILY, continued.				
			and as a unit of weight in the Indian Ganda system.	licorice.
Acacia farnesiana, Willd.		Ellington curse	American cultivated shrub, with flowers whose very pleasant "wallflower scent persists even when the flowers are dry.	Wood hard, red 50 lb. per cu.ft. Pleasant grain, but found in small sizes only.
Acacia richii,A.Gray.		Loaloa,Ngumu	Slender tree. Smooth grey bark. Up to 4 Feet girth. Pods dry and papery.	Timber hard, used for house posts.
Acacia simplicifolia, (Linn) Druce.(Syn. Acacia laurifolia, Willd.)	Tatania	Tatangia	Shrub on sandy beaches; seeds for necklaces.	
Adenanthera pavonica, Linn.	La'au lopa,Lopa	Lera,Vaivai (ni vavalangi or foreign)	Fast growing common tree. Probably introduced. Feathery leaves, reddish in youth. Small yellow fragrant flowers. Pods twist violently when opening ejecting scarlet seeds from which necklaces are made, and which are medicinal, and used as gold smith's weights. Deciduous. Nurse for coffee and nutmeg.	Timber hard, close grained. Sapwood grey, 41 lb.per cu. ft. Heartwood red, 56 lb.per cu. ft. Valuable for furniture and building. Good firewood.
Albizzia falcata,Backer. (Syn.Albizzia moluccana, Miq.)		Vaivai(ni vavalangi or foreign)	Probably fastest growing of all tropical trees. A six year old tree, 60 ft.high,	White soft wood. Suitable for banana cases or paper if

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			and 4 ft.girth. Produces 1 1/3 tons air dry wood, or 11½ tons per acre per annum of 50% pure cellulose. Mature for timber at fifteen years of age.	mixed with other pulp.
Albizzia lebek,Benth.		Vaivai(ni vavalangi or foreign.)	Fast growing shade tree. Flowers cream colored.	East Indian walnut; Ornamental timber for furniture. Grows straight and tall only in plantations.
Albizzia procera		Vaivai(ni vavalangi or foreign)	Tree of Burma. Bark a fish poison.	Hard wood; Suitable for furniture.
Bauhinia purpurea, Linn.			Introduced ornamental tree. Flowers a laxative.	Wood can be used for tool handles.
Bauhinia tomentosa, Linn.	Lau-lalo		Shrub or small tree.	Wood tough, nearly black, used for knife handles and sheaths.
Caesalpinia bonduc, Benth,Roxb. (Syn. Caesalpinia jayabo, Maza.)	Ano-oso, Ana-oso-vao	Soni	Woody climber, common.	
Caesalpinia bonducelle, Flem. (Syn.Caesalpinia crista, Linn.)		Soni	Woody climber; Nickar Bean. Littoral scandant shrub.	Roots, leaves and seeds medicinal around the world. Leaves contain bonducin. Fat of seeds in cosmetics. Softens skin. Removes pimples.

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LEGUMINOSAE or PEA and BEAN FAMILY continued.				
Caesalpinia pulcheressima, Swartz.	Lau-pa		"Pride of Barbados" or formerly Golden Mohur Flower flowering tree or bush. There is a yellow, and a red flowered race.	Timber heartwood hard, can be used for treenails.
Canavalia microcarpa, Piper. (Syn.Canavalia turgida, Genth)		Ndralawa	Climbing vine; Littoral, suitable green manure for flat land.	
Canavalia rosea D.C. (Syn.Canavalia lineata, Prain (Syn.Canavalia obtusifolia, D.C.)	Fue-fue-fai-va'a, Va'a	-	Littoral herbaceous vine; Purple flowers, on sandy beaches. Spiny branches used in catching fruit bats. Seeds used as marbles. Good cover crop and cattle food. Young pods eaten. Flowers eaten as a flavoring.	
Canavalia sericea		Ndralawa	Littoral climbing vine.	
Cassia alata, Linn.	Fa'i-lafa, La'au-fai-lofa	-	Ornamental shrub. "The seven golden candlesticks." Native of America; crushed leaves used to cure ringworm, and other cutoneous diseases. Decoction of leaves or wood is purgative.	
Cassia fistula, L.			The Golden Shower tree of South East Asia. The long fistular pods contain between the seed a pulp used to cure constipation.	Timber good, known as "Indian Labernum" Heartwood very hard, very heavy, grey to brick red darkening

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LEGUMINOSAE or PEA and BEAN FAMILY continued.				
				with exposure. Difficult to work, and apt to split, but when made up into furniture resembles the red mahogany. More durable than teak.
Cassis grandis			Spreading tree; Native of S. America. Bright pale pink flowers when tree is bare in March. Coarse skinned slightly curved pods.	
Cassia laevigata, Willd.	-	Winivinikau	A tropical American green manure plant for hilly country.	
Cassia nodosa,Hamb.			Tree of China,small to large. Medicinal. Bark rubbed on the hands for itch.	Sapwood soft, white, useless. Heartwood dark, and fairly durable.
Cassia occidentalis, Linn.		Kaumothe	A green manure. Not very successful as it becomes too woody after 2 years. Medicinal.	
Cassia siamea, Lam.			Tree of moderate height. Grows easily from seed. Flowers eaten in curries. Rapid growth.	Sapwood soft, white, useless for timber. Heartwood blackish olive,durable,hard,

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LEGUMINOSAE or PEA and BEAN FAMILY continued.				
				heavy. Planted for fuel in Gold Coast.
Cassia sophera	La'au-tinei-lafa		Tall slender, shrubby annual; oil from bark used in treating skin diseases. Green manure.	
Cassia tora, Linn.		Kaumothe	A green manure.	
Crotalaria quinqueflora, (quinquefolia?)		Mboa	Shrubby herb 2 foot high. Littoral.	
Crotalaria saltiana, Andrews.	Recorded, but not named.	-	Herb.	
Crotalaria verrucosa, Linn.	Recorded,but not named.	-	Woody plant. Medicinal and poisonous.	
Cynometa gradiflora, A. Gray		Thimbithimbi, Tongatu	Small tree on river banks; leaves one pair of unequal sided leaflets. White flowers densely clustered.	Hard strong timber.
Dalbergia monosperma, Dalzel.		Ndenimana	Woody climber.	
Delonix regia, Rafin. (Syn.Poinciania regia, Bojer.)		Sekoula	The Flamboyant or Flame tree of Madagascar.	Heartwood dark, hard, used for posts and flooring, does not split, very durable resisting moisture and insects. Bark a

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LEGUMINOSAE or PEA and BEAN FAMILY continued.				
				febrifuge. A dye, quercetin in the flowers. The gum is soluble in water and resembles gum arabic.
Derris eliptica, Benth.	Fue-fai-'ava	Nduva(ni vavalangi or foreign.)	Fish poison vine. Introduced, cattle can become ill or die after eating it.	
Derris malaccensis, Benth,Prain.			Woody climber of forests. Malay derris, (Malay word, Tuba) rosy tint on stems and young leaf petioles.	
Derris trifoliata,	Fue'-o-'oro	Nduva, Tuva Watuva	Beach and mangrove fish poison vine.	Rough cordage from the stems which are very tough.
Desmondium heterophyllum, D.C.	-	Senivakathangu	Trailing herb found from South East Asia to the Pacific.	
Desmondium triflorum, D.C.		Konikoni, Vakathangi	Small herb.	
Desmondium umbellatum, D.C.	Lala,Lau-lala	Sausautave, Tokaimbembe	Beach shrub.	
Dioclea violacea, Mart.		Wandra	Large liana.	
Dolichos labab, Linn. (Syn. Labab vulgaria, Savi.)			Bonavista Bean. Soil rejuvenator, seeds eaten.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
LEGUMINOSAE or PEA and BEAN FAMILY continued.				
			"Dolichos hosei" of Borneo is better as it has little tendency to climb, and might replace Mikania,(qv) as it grows well in shade. Reproduces by cuttings.	
Entada phaseoloides, Merr. (Syn.Entada gigus,Fawcett & Rendle.) (Syn.Entada scandens, Benth.)	Tupe	Walai,Watangiri, Wawai	Very large liana St. Thomas's Bean, long heavy, very large pods up to 3 feet long. Fresh water which can be drunk runs out of lengths of stem when cut. Seeds flat, round, highly polished.	Bark contains saponia and is used as a soap and hair wash killing lice etc. Used as a fish poison.
Erythrina fusca, Lour. (Syn.Erythrina ovalifolia, Roxb.)	Lalapa	Ndralakaka	Fast growing prickly tree.	White soft wood. Can be used for Packing cases and cheap planking.
Erythrina indica, Lamarck. (Syn.Erythrina variegata, orientalis)	Ngatae,(Flowers of the tree) 'Alo-'alo	Ndrala, Rara, Rarawai,Rarandamu	The fast growing coral tree or Dadap.	White soft wood, can be used for packing cases.
Haematoxylon campechianum, Linn.	-	-	The logwood dye tree of the West Indies.	Yields the Campeachy dyewood giving a crimson and a permanent black.
Indigofera arrecta	-	Mohawa	A herb producing the blue dye indigo which replaced the British dye"wood" in Europe. Indigo is one of the most per-	

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LEGUMINOSAE or PEA and BEAN FAMILY continued.				
			manent dyes having been found in Egyption mummy wrappings of 2300 B.C. It has been replaced by cheaper synthetic analine dyes.	
Intsia (or Afzelia) bijuga, A. Gray.	Ifilele	Vesi	Common tree of sea coast; silver grey bark flakes off showing green underbark. One or a pair of leaflets, no terminal. Slow growth-140 years to maturity. Coppices freely.	Strong, hard, durable, yellowish red excellent construction timber, but corrodes nails in the open. Used for kava bowls. Rarely sawn in the mills as it requires specially set saws with shorter teeth. Coloring matter very soluble and comes out causing stains if the wood is used for window sills. White ants will not touch the wood. There is usually a sulphur yellow deposit in a number of vessels. This characteristic is specific to this wood.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
LEGUMINOSAE or PEA and BEAN FAMILY continued				
Inocarpus edulis, Forst.	Ifi, Ifimea	Ivi	Tahitian chestnut tree, tall stately tree; Large dark green leaves, heavy shade. Bole buttressed and fluted. Lowland tree; fruits in March. Seed has a pleasant chestnut flavor when cooked. Regenerates freely forming groves.	Fluted bole. Hard to work. Mosquitoes breed in crevices in the stem. Timber tough, used for tool handles.
Leucana glauca,Benth.	Lopa Samoa	Vaivai (ni vavalangi or foreign)	Shrub or small tree probably of tropical America; white pompom flowers, thin brown pods. Prolific regeneration; grows rapidly; coppices vigorously. Cattle and goats eat it, but if horses do the hair falls from their manes and tails.	Good wood. Strong, but only available in small sizes. Forms a good firewood. Can be a nurse to rehabilitate eroded lands.
Mimosa pudica, Linn.	Tui-tui, Vao-fefe (or the frightened flower) Vao tui-tui	Tho-Ngandrong-andro	The Sensitive plant of Central America. Woody scrambler. Pink "Puff-ball" flowers, prickly stem.	Introduced to enrich pastures. Cattle eat it and thrive.
Mucuna gigantia,D.C.	Fue-fue,Fue-vai	Wakore	Large coastal liana, climbs high. Sap in stem, a thirst quencher. Large brown beans. Pods covered with irritant hairs.	
Pithecellobium saman, Benth.		Vaivai (ni vavalangi or foreign)	Small sized tree.	

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LEGUMINOSAE or PEA and BEAN FAMILY continued.				
Pongamia pinnata, Merr. (Syn. Pongamia glabra, Vent.)		Vesi, Vesi ni Wai	Moderate sized tree found on sea shore. Ornamental pink flowers; pinnate leaves. Seeds contain 27-40% of a thick yellow-brown oil, bitter tasting because of resin, useful for soap, or medicinally for skin disease, and as a liniment for rheumatism. Roots give a fish poison.	Timber white to greyish yellow, moderately hard, and moderately heavy. Not durable Bark used for cordage.
Pterocarpus indicus, Willd.	-	Thinmbithimbi	Large introduced tree; prefers rainfall over 60 inches. Easy to propagate by seed or cuttings; rapid growth. Fine roadside tree. Little litter, branches seldom break. 60 ft. radius spread. Fragrant yellow flowers. Fruit orbicular winged.	Beautifully grained fragrant golden wood, moderately hard, moderately heavy. White sapwood attacked by insects, but not heartwood. Giant burrs highly esteemed for furniture. Wood contains a red dye.
Samenia sama, Merrill	-	-	The Rain tree. Roadside shade tree. Wide spreading branches; pink flowers.	Red wood, sometimes used for furniture.
Saphora tomentosa, Linn.	Fu'a feti'i-ti'i	Kau ni, Yalewa	Lowland shrub.	
Serianthes myriadenia, Planch.		Vaivai	Tree up to 70 feet high, and girth 8 feet. Feathery crown found colonising semi-dry areas, but groves are found ringed for shifting cultivation. Seeds not winged and dispersal poor.	Timber pale yellow, strong, durable, valued for ship building. Somewhat coarse grained.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
LEGUMINOSAE or PEA and BEAN FAMILY continued.				
Serianthes vitiensis, A. Gray		Vaivai	Similar to above.	Similar to above.
Storckiella vitiensis, Seem.	-	Marasa, Vesinda	Large tree, 50 ft. high, girth 8 ft., bark dark, scaly, red underbark. Leaves pinnate, 5 pairs and terminal leaflet.	Timber used. Sapwood white. Very hard and durable. Favorite for houseposts. Superior to Intsia for decking.
Tamarindus indica, Linn.	-	-	The Indian Tamarind tree, up to 80 ft. in height. Fruit contains tartaric acid.	Heartwood hard, but there is little of it. Wood as fuel gives out strong heat.
Tephrosia piscatoria, Pers.	'Avasa	Tuvakei	Littoral shrub; Excellent green manure, especially for contour hedges.	Roots contain a fish poison, dried and powdered as an insecticide.
Uraria lagopoides, D.C.	Lala	Lakanikasa, Setamoli	Woody plant used as green manure on open sandy country.	Boiled roots medicinal for worms. Crushed leaves for lice.
Vigna mariana, Merr. (Syn. Vigna lutea, A. Gray)	Lau-fue-fue	Ndrautola, Wavue	Low seashore climbing herb. Good as a green manure, but subject to insect attack.	
RUTACEAE or CITRUS FAMILY				
Acronychia heterophylla, A. Gray.		Ngarikalevu	Small tree, extending from Asia to Samoa.	Timber moderately heavy, strong.

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RUTACEAE or CITRUS FAMILY.				
Atlantia S.		Molimoli	Climber with small oranges as fruit.	Wood for very small tool handles.
Citrus aurantium,Linn.	Moli aina	Moli jamu	Seville or sour orange.	Timber very hard like boxwood, often of great beauty.
Citrus aurantifolia, (Christm.) Swigle.	Moli tipolo, Tipolo	Molilaimi, Laimi	The lime tree.	Hard dense timber.
Citrus hystrix	(Moli Samoa,) (Moli-vao), Moli u'u	-	The Samoan wild orange, fruit unfit to eat, juice applied to hair. Small tree with pear shaped green fruit.	Timber excellent for tool handles, canes and axe handles.
Citrus limonia, Osbeck.	-	-	The Canton lemon tree, globose fruit.	
Citrus limonia, Reiss.	-	Moli kara	A lime tree.	
Citrus limon, Burm.			The true lemon; prefers a dry climate.	
Citrus nobilis, Lour.	Moli saini (China)	Moli mandarini	The mandarin orange.	
Citrus medica, Linn.	Moli putuputu	-	The true Citron.	Timber white to yello moderately hard, heav and close grained. Used for tool handles.
Citrus maxima,(Burm) Merr.		Molikana	The Shaddock of Pomelo. Some races with fruit as big as a man's head. Fragrant perfume extracted from flowers.	Timber white to yello moderately hard, heav and close grained. Use for tool handles.

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RUTACEAE or CITRUS FAMILY continued.				
Evodia hortensis, Forst.	Usi	Rauvula, Uthi, Sathasatha	Shrub with fragrant flowers which coconut oil is scented. Leaves yield on distillation a fragrant pungent volatile oil. Leaves of some varieties have a strong unpleasant odor.	
Evodia vatiana	Matamo		Shrub or small tree in lowland forest.	
Evodia sp.	Fu'a-pini	-	Shrub with strong unpleasant odor.	
Feronia limonia, Linn.		Vakandra	Small tree: The wood apple. Leaves and fruit medicinal.	Timber yellowish, hard, used for oil crushing roller
Micromehum minutum, Seem.	Talafalu, Ta'a-mafulu	Ngingila, Sauthava	Small tree; parts used medicinally, and for magic. White flowers, leaves with odor.	
Zanthoxylum pinnatum, (Syn. Xanthoxylum pinnatum, Forst.)		Warui	Aromatic trees; prickly stemmed. Fruits as condiments and medicinal.	
BURSERACEAE or BALSAM-RESIN FAMILY.				
Canarium vitiensis, A. Gray.		Ndindi	Medium sized tree. Oily edible seeds. Tapped for a fragrant resin.	Timber very light.
Canarium commune, Linn.	Recorded, but not named.	-	The cultivated large sized Kenari nut tree of South East Asia. Nuts replace almonds in cakes.	Wood light in color hard, not durable.

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BURSERACEAE or BALSAM-RESIN FAMILY continued.				
Canarium sp.	A'a-matie		Tree on Savi'i.	
Canarium mafoa, E. Christophersen.	Mafoa		Large forest tree.	
Canarium sameonse, Engler	Ma'ali		Very large forest tree; not uncommon. Gum used to perfume coconut oil.	Wood occasionally used for canoes. Not cut by sawmills as the wood is said to contain silica (?), which blunts the saws.
Garuga pacifica	Mangaui	-	Common large tree in lowland forest. Resembles the "Spondias dulcis". Pinnate leaves covered with soft down; young leaves light red. Leaf fall, and new leaves August. Coppices well. Forms about 10% of large timber tree in forest. Regeneration profuse. Used for reafforestation.	Heartwood excellent, but wide sapwood which rots in about two years Very rarely cut by sawmills, as no preservative treatment for the sapwood has ever been devised or tried.
MELIACEAE or MAHOGANY FAMILY.				
Aglaia edulis,A.Gray.		Langakali		
Aglaia elegans, Gill		Kautoa,Kula,Misi		
Aglaia mutlijuga,Seem.		Ndanendanilca		
Aglaia samoense	Langa'ali		Small tree.	Dark strong, but small timber used for house-

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MELIACEAE or MAHOGANY FAMILY continued.				
Aglaia samoense (continued)				posts.
Carapa moluccensis,Lam. (Syn.Xylocarpua moluccensis, M. Roem.)	Le'i-le'i	Ndambi	Straight tree of mangroves; fruit size of an orange, the "Puzzle nut." Bark rough, pneumetophores.	Timber fine grained, red brown. Excellent for furniture.
Carapa granatum,Alston. (Syn.Carapa obovata,A. Juss.)(Syn. Xylocarpus grantun,Koenig)	Le'ille'i	Ndambi, Lengilengi	Short crooked bole, smooth brown bark. Fruit size of a child's head, the "Coastal Cannon Ball tree." Roots flattened laterally, and twist over surface of the mud like a mass of snakes.	Brown heartwood, timber valued for boat knees, as furniture wood, and for firewood.
Cedrela mexicana	-	Cedar	The cigar-box cedar of Mexico in Plantations.	Excellent scented, medium hard reddish wood.
Cedrela odorata, L.	-	-	A similar cedar of Central America in Plantations.	Excellent scented, medium hard reddish wood.
Dysoxylum hornei, Gill.		Raindambo		
Dysoxylum kuntii	Maota mea		Tall tree with straight trunk.	Wood called "Tafaso", burns green as firewood.
Dysoxylum lenticellare, Gill.		Mbausoro, Kautoa		
Dysoxylum maoto	Maota		Tall tree, fairly common in upper canopy.	Wood said to be useles because it splits and

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MELIACEAE or MAHOGANY FAMILY continued.				
				rots. It is however, very strong, and very hard. It smells strongly when freshly cut.
Dysoxylum obliquum, Gill.		Mbausomi		
Dysoxylum richii		Ndondotarawau, Vesinda, Sausauira		
Dysoxylum samoense	Mamala		Large tree of lowlands; Fruit eaten by pigeons.	
Dysoxylum sp.	-	Tokai	Trees large to small. All trees and wood have characteristic smell.	
Vavaea amicorum, Benth.		Thevua, Tumbuanthevua	Small timber tree; leaves cyclically clustered at the end of twigs. The fruit is a berry, ripens in March.	Wood yellow, fairly hard, sweetly scented durable. Used for house and fence posts and for lining cabinets.
Vavaea megaphylla, Wright.		Thevua, Sevua	Timber tree.	
Vavaea vitiensis, Seem.		Tumbuani thevua	Timber tree.	
Swietenia macrophylla, G. King.	Mahogany	Larged leaved Mahogany.	Plantation tree; grows well and fast. Shoot borer not reported in Fiji. Tree now being introduced into Samoa.	Wood darkens after making up. Sapwood attacked by borers if the bark is not

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MELIACEAE or MAHOGANY FAMILY continued.				
			Seed winged. Mean Annual Increment; girth 2.15 inches; height 1.4 feet.	promptly removed from the felled trees.
Swietenia mahogani, Jacq.		Small leaved Mahogany.	Plantation tree, grows well but slower than Swietenia macrophylla.	Practically identical with Swietenia macrophylla.
MALPIGHIACEAE				
Hiptage javanica,Blum.		Watambua	Climbing shrub; Sweet smelling flowers.	Bulls are stimulated by a decoction of the roots which contain a glucoside hiptagin.
EUPHORBIACEAE or MILKY SAP PLANT FAMILY				
Acalypha insulana, Muell & Arg.		Kalambuthi	Shrub used as a hedge plant.	Medicinal.
Acalypha wilkesiana, Muell & Arg.		Kalambuthindamu	Shrub.	Medicinal.
Acalypha rivularis, Seem.		Kalakanda		
Acalypha sp.	Si'u-si'u-pusi		Red leaved ornamental. The name means "Cat's tail", in reference to the pending furry spike.	Medicinal.

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EUPHORBIACEAE or MILKY SAP PLANT FAMILY, continued.				
Aleurites moluccana, (Linn) Willd.	Lama	Lauthi, Sikethi' Ngerengere, Toto, Tui-tui	Candle-nut tree. Seeds burned as candles and for soot for dye. Sap for dye; fruit medicinal. Oil substitutes for linseed oil. Prefers dry climate and very sandy soil. Juice of fruit wall used for tattooing.	White, light, soft to fairly hard, coarse grained, rather useless timber. Splits easily. Can be used for match sticks, or for paper pulp, (62% Cellulose.)
Antidesma insulare, Gill.		Natha	Shrub or small tree, often cultivated for its fruit. Can grow up through coarse grass in clearings, and assist in reafforestation.	Wood for house posts, and it is quite strong for rafters.
Antidesma sphaerocarpus	Masame			
Bauccaurea obtusa, A.C.Sm.	-	Sinumbuta	Small tree.	
Bauccaurea seemanni	Fu'a-lapotopoto	-	Small tree in lower forest.	
Bischoffia javanica, Blume.	O'a	Koka, Kokandamu, Tongo, Tongo-tongo	Common lowland timber tree.	Timber usable. Good firewood.
Carumbium nutans, Mull-Arg.		Tandano	Shrub or small tree.	
Claoxylon echinospermum, Mull.		Nisimanavanua	Shrub. Leaves medicinal.	
Claoxylon vitiensis, Gill.		Malenivia	Small tree.	
Codiaeum valiegatum, A.Juss.		Sathasathaloa, Vasandamu	Ornamental "Croton" shrub of gardens. Cultivated. Not the	Used to plant near houses and as a

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
EUPHORBIACEAE of MILKY SAP PLANT FAMILY continued				
			tree croton of botanists. Many varieties of colored leaves. Young leaves of the yellow variety may be eaten and are sweet. When old they, and other parts burn the mouth and leave a discomfort, which may last the whole day.	screen.
Codiaeum sp.		Maka, Mbatimandraman-dra	Ornamental shrub. Cultivated.	
Endospermum macrophyllum, Mull. & Arg.		Kauvula, Lekutu	Large tree, light demander; fast growth. Often found in old secondary forest.	Wood white, soft, tough, light demander; medium stron Used for banana case but suitable after treatment for any work. Discolors easily if left wet, unseasoned. Used for match sticks and clogs.
Endospermum robbieanum, A.C. Sm.		Vulavula	Large tree.	Soft timber.
Euphorbia atoto,Forst.	A'atasi,Pulutai	Totoyava, Totolu	Stout erect herb or weed, milky juice.	
Euphorbia sp.	La'au-fai-moyi	Ndeniose, Ovoku, Soto, Sinu	Herbaceous weeds. Latex usually poisonous, useful for painting the bottom of canoes as it de-	Latex of some specie raises rashes on the skin, used as fish o

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
EUPHORBIACEAE or MILKY SAP PLANT FAMILY continued				
			ters marine worms.	arrow poison.
Excoecaria acuminata, Gill.		Manaivanua	Shrub or small tree. Poisonous sap.	
Excoecaria agallocha, Linn.		Sinunganga	The "Blinding" tree of the mangrove swamps, whose plentiful sap splattered by an axe cause temporary blindness. relieved by coconut oil. Sap a poison by causing inflammation of the bowel.	Wood contains diseased portions used as the incense wood called Aloes or Agallocha. Makes good firewood and charcoal. Used for matches and clogs.
Glochidion cordatum		Ngalongalo, Molau, Ngalongalovosa	Tree.	
Glochidion cuspidatum	Masame-vao		Tall forest tree.	Timber heavy, used for clubs.
Glochidion manono, Mull.		Manono	Small tree.	
Glochidion ramiflorum, samoanum.	Masame	-	Small to medium forest tree.	
Glochidion seemanii, Mull.	-	Molau	Small tree.	
Hevea brasiliensis	Pulu	Rubber tree	The "Para" rubber tree.	Wood useful only for firewood.
Homalanthu acuminatus	Mamala	-	Medium sized tree, common in forest.	Wood good, but the dus produced by sanding ha

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
EUPHORBIACEAE or MILKY SAP PLANT FAMILY continued.				
				an irritating effect on the mucous membrane of the nose and throat causing bleeding.
Homalanthus nutans	Mamala, Fanua-mamala	-	Small tree of open lowlands. Leaves used as circumcision dressings. Bark and leaves yield black dye.	Wood soft, not durable.
Jatropha curcas, Linn.	Lau-pata	Mbanidekai, Mangele, Wiriwiri	Cultivated "physic nut" of tropical America; Strong purging action. Poisons of different kinds found in the husk, in the seeds which have a pleasant taste, and in the old leaves. Oil in seed used to stimulate hair growth. Shrub size plant.	
Macaranga crenata, A.C.Sm.		Kitimoku	Tree.	
Macaranga harveyana	Lau-pata		Small tree; common in lower forest. A light demander appearing in early ecological succession. Very useful sylviculturally. Leaves used to wrap food.	Wood soft white and light; burns readily.
Macaranga macrophyllium, A.Gray.		Mavu	Tree of secondary forest.	Wood soft and white.

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EUPHORBIACEAE or MILKY SAP PLANT FAMILY continued				
Macaranga membranecea, Mull-Arg.		Lutulutu,Ovutu	Tree of secondary forest.	Wood soft and white.
Macaranga sanguinea,Gill.		Tavitilau	Shrub.	
Macaranga stipulosa	Lau-pata,Pata, Lau-futu		Small to large tree; common in lower secondary forests. Leaves used to wrap food, and also medicinal.	Wood soft and white.
Macaranga sp.	Mamalava	Ngandoa	Large tree of mountain and lower hill forest. Regeneration profuse in secondary forest.	Wood used for canoe parts, because it is soft, light and easily worked.
Manihot utilissima, Linn.	Maniota,Tapioka, Ufi-la'ao, Ufi-maniota	Tavioka,Yambia (ni vavalangi or foreign) Uto, (ni vavalangi or foreign.)	The casava or tapioca plant.	
Phyllanthus seemaniamus, Mull & Arg.		Molau	Small tree, edible fruits.	
Phyllanthus niruri	Fu'a-lili'i		Small herb in lowlands found throughout the tropics. Medicinal. Decoction used to stimulate the kidneys. Also as a poultice and a dye.	
Phyllanthus simplex	'Avase		Herb.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
EUPHORBIACEAE or MILKY SAP PLANT FAMILY continued.				
Croton verrauxii var. Storkii, Seem.		Ndanindani	Shrub, early coloniser of open spaces.	
Ricinus communis, Linn.	Lama-papalangi	Bele (ni vava-langi or foreign) Toto (ni vava-langi)	Castor oil plant. Introduced. Was in cultivation under the Pharaohs.	
ANACARDIACEAE or CASHEW-NUT AND MANGO FAMILY.				
Anacardium occidentale, Linn.			The Cashew-nut tree of Tropical America. Young leaves eaten raw with rice. Uncooked nuts are poisonous, but when roasted are edible. Medicinal substances obtained from the sap, bark, fruit, nut pericorp etc. The swollen fruit base is eaten as the Cashew apple.	Timber of littl. value, soft to moderately hard, light to reddish brown.
Buckanania attenuata, A.C.Sm.		Kaukaro	Tree.	
Buckanania macrocarpa	Mamalava		Tree. Seeds of some species yield edible nuts and edible oil	Timber not durat
Buckanania vitiensis		Ndamanu ni Yanganga	Tree.	Timber used, not valued.
Dracontomelon sylvestre, Bl.		Tarau, Tarawau	Tree with edible fruits.	
Onocarpus vitiensis, Seem.		Kaukaro	Tree with poisonous sap.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
ANACARDIACEAE or CASHEW-NUT AND MANGO FAMILY continued.				
Pleiogynium solandri, (Benth), Engler.		Ndumbundumbu, Manui, Manawai, Totowiwi	Small tree, edible fruits.	Timber used for canoes.
Rhus taitensis	Tavai		Large common forest tree, fruit eaten by pigeons. Bark probably rich in tannin. Medicinal.	
Rhus simarubacfolia, A. Gray.		Manawai	Small tree.	
Spondias cytherea, Sonn. (Syn. Spondias dulcis, Forst.	Vi	Wi	Large tree of lowlands, yellow fruit; Otaheite-Apple with pineapple flavour, eaten and made into jam.	Wood very brittle and branches are liable to break in the wind.
CELASTRACEAE.				
Celastrus richii, A. Gray.		Draunisendre	Shrubby climber. Leaves medicinal.	
ICACINACEAE.				
Chariessa samoensis	Ala'a, Alo-alo-vao		Small tree in forests. All elevations.	
Lasianthera?) or Stemonurus of Rubiaceae) of Oleaceae?)		Nduvu	Small tree. Medicinal.	Recorded in this family by Parham.
Tylecarpus samoensis	Matamata-moso		Woody vine lowlands, poisonous seeds.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
SAPINDACEAE or SPINDIE-WOOD FAMILY.				
Alectryon grandifolius, A.C.S.		Masa	Tree.	
Alectryon samoensis	Taputoi		Forest tree on Savai'i	Wood hard, used for axe handles.
Cardiospermum halicacabum, Linn.		Wanui, Voniu	Climbing shrub, Baloon vine; Heart Pea; Found all over the tropics. Medicinal. Leaves cooked as a vegetable.	Roots purgative.
Cupania rhoifolia, A. Gray.		Mbakanivundi, Wive	Tree.	
Dodonaea viscosa, Jacq.	Lala-vao	Wase	Shrub or small tree of lowlands found all around the world. Winged fruit. Medicinal.	Timber extraordinarily hard, used for house posts, and for small articles like tool handles and walking sticks. Usually cut when too small and then used for firewood only.
Harpullia arborea		Vuvula	Tree. Bark for fish poison.	Timber white and of little value.
Koelreuteria sp.		Manawi, Wiri	Medium sized tree.	
Pometia pinnata, Forst.	Tava, often pronounced Kava.	Ndawa	Large lowland forest tree; fruit edible. Regeneration profuse in parts of secondary forest. Numerous serrate edged large leaflets	Yellow brown strong hard wood, flexible and tough. Fairly easy to work. It bends well when steamed, and might

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
SAPINDACEAE or SPINDLE-WOOD FAMILY continued.				
			on large pinnate leaves.	do for cooperage and boat building. Not durable unless treated, but used for house building and furniture. Difficult to saw because of a sticky gum which foams as a white cream on the saw.
RHAMNACEAE or BUCKTHORN FAMILY.				
Alphitonia excelsa, Reissek.		Ndoi	An Australian and Pacific species of tree. Leaves as fodder. Bark tans.	Timber valued for coopers staves and indoor work. Contains a glucoside dye. The dye is brought out by washing the timber in caustic soda.
Alphitonia zizyphoides	Toi		Lowland forest tree, sap with peppermint odor. Leaves used for soap.	Good firewood. Used for carving trays etc. in Tutuila and for canoes, and kava Bowls. Sapwood white, heartwood red.
Colubrina asiatica, Brougn.	Fisca	Vere, Vusolevu	Common small tree near sea shore. Leaves used for soap.	
Smythaea pacidica, Seem.		Vuso	Climbing shrub found from Malaysia to the Pacific.	Said to be durable under water, and used for binding fish stakes.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
RHAMNACEAE or BUCKTHORN FAMILY continued.				
Ventilago vitiensis,A.Gray		Ngiringirinawa	Climbing shrub. Medicinal	Stem used for rough cordage.
ELAEOCARPACEAE. Sometimes included in the Tiliaceae.				
Elaeocarpus gillespianus, A. C. Sm.		Mamakara	Tree; berries eaten by birds.	Timber not durable, but used for making charcoal.
Elaeocarpus kambi,L.Gibbs.		Kambi	Large tree; berries.	Timber not durable, but used for making charcoal.
Elaeocarpus storckii,Seem.		Ngaingai	Tree. Edible fruits.	Timber not durable, but used for making charcoal.
Elaeocarpus sp.		Masiratu	Tree; berries	Timber not durable, but used for making charcoal.
TILIACEAE.				
Grewia malococca,Linn.		Siti	Shrub or small tree on coastal forest. Fruit,a drupe which is edible.	Tough, light white wood for oars. Bark made into rough ropes.
Grewia prunifolia,A.Gray.		Siti	Shrub or small tree on coastal forest. Fruit,a drupe which is edible.	Tough, light white wood for oars. Bark made into rough ropes.
Grewia crenata	Fau'ui,Fau'i, Mangele		Shrub or small tree on coastal forest. Fruit,a drupe which is edible.	Tough, light white wood for oars. Bark made into rough ropes.

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TILIACEAE. (continued)				
Trichospermum richii, Seem.		Maku	Tree.	Timber light in weight, ropes made from bast fibres.
Trichospermum calyculatum, (Seem) Curr.		Makuiloi	Tree.	Similar to above.
Triumfetta procumbens	Fu'a-tala, Lau-tofu-tai, Manu-tofa-lai		Beach vine, yellow flowers; brown oval burr.	Probably yields fibres of the jute class.
Triumfetta bartramia	Mautofu-vao		Lowland weed, yellow flowers, and a burr.	Similar to above.
MALVACEAE, BOMBACACEAE or HIBISCUS FAMILY.				
Ceiba pentandra (Syn. Eriodendron anfractuosum, D.C.)	Vavae (papalangi or foreign.)		The kapok tree, "Cotton" surrounding the seeds is used to stuff cushions.	Wood white, soft and useless. It is dangerous to climb as the branches break easily.
Gossypium barbadense	Vavae-Samoa	-	The cotton plant, growing semi-wild.	
Gossypium sp.		Vauvau (ni vavalangi) or	The cotton plant.	
Hibiscus abelmoschatus, (Syn. Abelmoschatus moschatus)	'Aute-tonga. Fau-tangaloa, Vavae-vao	Wangenge, Waaki-waki, Vakeke, Okeoke	Shrub in plantations and open fields. Seeds scented with musk; have for centuries been an article of commerce from Arabia to Europe under the name of "habel-mishk" or "seed of	Stem contains fibre.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
MALVACEAE, BOMBACACEAE or HIBISCUS FAMILY continued.				
			musk." The name abelmoschus is derived from this name. Medicinal. The seeds keep insects from clothes.	
Hibiscus esculentus, Linn.	-	-	Cultivated "Ladies Fingers", or Gombo or Ochro vegetable formed of young pods. Seeds can be used for coffee.	
Hibiscus diversifolius, Jacq.		Kalakalauaisoni, Kalauaisoni, Lewanisangalu		
Hibiscus manihot, Linn. (Syn.Abelmoschus manihot, Medik.)		Mbele, Vauvau	Cultivated shrub. Edible as spinach. Numerous varieties distinguished by the Fijians. Handsome yellow flowers.	Mucilage for sizing paper. Leaves eaten.
Hibiscus rosa-sinensis, Linn.	'Aute-Fautu	Kauti, Loloru, Senithiombia, Senitoa	Ornamental hibiscus; red flowers yield a dye. Red, white, yellow and other races long cultivated.	Juice of petals for hair dye.
Hibiscus schizopetalus, Hook.	-	-	Hybridized with Hibiscus rosa-sinensis.	
Hibiscus storckii, Seem.		Sengelu		
Hibiscus tiliaceus, Juss.	Fau	Vau, Vau (ndina or true)	Common shore tree, poplar like leaves. Yellow flowers, red centres darkening before they fall. Cuttings and posts strike easily. In swampy or	Ornamental timber for furniture, and canoe parts, lasts well in contact with water. Bast for rope

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MALVACEAE, BOMBACACEAE or HIBISCUS FAMILY continued				
			poor ground assumes a scandant form. Medicinal.	fibre or dance skirts.
Hibiscus tricuspis,Gill.		Vaundra		
Ochroma lagopus,Swartz.	-	Balsa	Found in plantations. The Balsa tree of the West Indies, fast growing.	Very light, white soft wood.
Sida rhombifolia,Linn.	Mau-tofu	Ngavinilawi Ndenime	Weed, found all over the world. Medicinal. Poultices ripen boils.	Fibre if well prepared sells at the same price as jute.
Thespisia populnea, Corr.	Milo	Mulomulo, Wiriwiri	Common sea shore tree. Grows from cuttings.	Wood used for small kava bowls. Juice medicinal.
Urena lobata, Linn.	Manutofu,Mau-tofa,	Ngatima, Nguatema	Lowland shrub; 2 to 3 ft. high in open spaces. Animals eat the foliage.	Fibre sells like jute. Tough paper can be made from it.
STERCULIACEAE or CACAO FAMILY.				
Cola nitida	Plantation crop. "Cococola nut"	-	The tree Kola nut. If chewed fresh it is bitter, then a sense of well being comes over the body, and things eaten after taste sweet.	Timber not durable, but makes a good firewood.
Commersonia echinata, Blum.		Lekesama, Sama	Small tree.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
STERCULIACEAE or CACAO FAMILY continued.				
Heritiera littoralis, (Dryand) Ait.		Kendraivinayalewakalou.	Littoral small to medium low growing branched tree occurring in dry mangrove areas; Leaves dark green above, and silver with small brown spots below. Slow grower.	Excellent timber, dark brown, tough, crooked; much valued in India and Burma, but straight trees are rare. Strong. A bar 1 inch square held by supports 22 inches apart broke with a weight of 700 lbs.
Heritiera sp.		Savai,Rongi,Moivi, Rosoroso	Large rare inland timber, found in good hill forest.	Excellent timber.
Kleinhovia hospita,Linn.	Fu'a-fu'a	Mamakara	Medium to large tree found from Mascarene Is. to Polynesia. Seedlings, strongly light demanding. Bark and leaves poisonous. Leaves used as a hair wash to destroy lice.	White wood, soft, not durable, used for building Samoan houses. The trunk is sometimes knotted and the twisted wood sometimes with black markings is valued for knife handles.
Melochia odorata	Ma'a, Ma'o		Small tree in open forest, light demander. Useful as nurse plant for more valuable species.	Wood for canoe parts, and for house posts.
Sterculia fanaiho	Fana'io		Medium sized littoral tree. Bast or inner bark used for making skirts.	Soft light timber.
Sterculia vitiensis, Seem.		Wathiwathi	Large tree.	Soft light wood,"off-white" to cream in

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STERCULIACEAE or CACAO FAMILY continued.				
				color. Prominent medullary rays for walls or cheap furniture.
Theobroma cacao		Cocoa	The cacao or cocoa tree of Central America.	
DILLENIACEAE.				
Hibbertia lucens, Brongniart and Gris.	-			
Saurauia rubicunda, Seem. (Sometimes included in Ternatroemiaceae.)		Mimila, Kauniyalewa, Kauyalewa	Small tree.	Timber probably soft.
Wormia biflora, A. Gray.		Kukulava, Kulava, Kuluva	Medium sized tree.	Timber of some species, hard.
OCHNACEAE.				
Rackenridgea nitida, A.Gray		Mbelembele	Shrub.	
GUTTIFERAE or GUMMY RESIN TREE FAMILY.				
Calophyllum burmanii, Wright.	-	Ndamanu	Large tree of good forest, forming 5% of total outturn of Fiji forests, and 60% of Samoa's.	Important timber, strong, moderately hard, light red; pleasant grain. Used for furniture and house construction. Almost identical with Central American

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
GUTTIFERAE or GUMMY RESIN TREE FAMILY continued				
				"Santa Maria" timber.
Calophyllum inophyllum, Linn.	Fetau	Ndilo	Common large littoral tree especially on sandy beaches. Dry fruit, a light ball, 1 inch diameter dispersed by waves. Leaves 8 inches long by 3 inches wide runs parallel from medrile.	Wood highly prized for furniture, used for house construction, kava bowls, canoes etc. Leaves and gum said to be medicinal.
Calophyllum spectabile, Willd.	-	Ndamanu, Ndilondilo.	Large tree. Perhaps the same as species above.	Good timber tree, see above.
Calophyllum samoense	Tamanu		Large tree plentiful in forest in Samoa. Regeneration absent under the parent tree. Seeds profusely.	The principal timber species of Samoa. Almost identical with species above.
Calysaccion tinctorium, Seem.	-	Vetau	Small tree.	Dye wood.
Carcinia pseudoguttifera, Seem.		Mbuliwai, Sarosaro, Mbulumangayalewa, Suere.	Small tree with bright yellow gum, which is like gambage.	
Carcinia mangostana, Linn.	-	-	Cultivated mangosteen.	
Carcinia sessilis, Seem.	Seilala	Raumba	Tree. Fragrant flowers, scent used for coconut oil.	
Carcinia sp.		Ndongoruta, Navola, Laumbu	Small to medium tree. Edible acid fruits. Known from	Timber hard, from yellowish to dark

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GUTTIFERAE or GUMMY RESIN TREE FAMILY continued.				
			Malaya to Polynesia.	brown, liable to split, but fairly durable.
Ochrocarpus excelsus	Mana-pau		Tree; Slow growth.	Good timber, dark red, hard, close and even grained.
BIXACEAE or the ANNATTO PIGMENT FAMILY.				
Bixa orellana,Linn.	Loa	Kesa,Ngisa, Ai Ngisa	Tall shrub or small tree from Central America being rapidly carried by the Spaniards all over the world. The Anattoor "Lip-stick" pigment tree. Medicinal too.	Bright yellow pigment, and red dye from the seeds. The Aztecs, Samoans and Caroline Islanders used it to color their bodies. The dye resists soap, alkalis and acids, but fades rapidly in sunlight.
Hydnocarpus kurzii, Warb.	-	-	Tree of Burma and Siam. The chief source of the Chaulmogra oil used in treating leprosy. Wild pigs eat the seed when their flesh produces nausea and vomiting.	Wood rarely used.
FLACOURTIACEAE.				
Erythrospermum acuminatissimum, (A.Gray), A. C. Smith.		Mavinda,Ngetata	Small tree.	

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FLACOURTIACEAE FAMILY continued.				
Erythrospermum polyandrum	Lau-tafifi	-	Small tree.	
Flacourtia ovata, Gill.		Tandruka	Fruit an acid berry.	Timber hard.
Flacourtia rukam, Zoll & Moritz.	Filimoto		Small to medium size trees of lowland and middle forest. Extending from Malaya to the Pacific. Edible fruit; medicinal inner bark. Juice of young fruits given for diarrhoea.	Hard heavy red wood. Used for clubs and rice pounders.
Cascaris disticha	Pou-muli		Very large tree in lower forest; bark comes off in flakes. Good distribution of size classes.	Wood very hard and very strong. Cuts well on the saw when green, but when seasoned is so hard that nails can not be driven into it.
Xylosma suaveolens samoensis.	Langa'ali-vao		Small tree in high hill forests.	
FLACOURTIACEAE or SAMYDACEAE.				
Homalium vitiensis, Benth.		Molaca, Molaca vula, Molaca ndamu	Small tree.	Timber probably good and durable in contact with the ground.
CARICACEAE or PAWPAW FAMILY				
Carica papaya, Linn.	Esi	Maoli, Oleti, Seaki, Weleti, Wi, Mummy Apple.	Soft woody cultivated apapaya.	

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THYMELACEAE				
Leucosmia burnettiana, Seem.		Sinundamu, Sinu (ndina or true.)	Shrub.	
Leucosmia publiflora, Seem.		Sinumataivi	Shrub.	
Leucosmia subcordatua, Seem.		Sinumataivi	Shrub.	
Phaleria acuminata	Sungi-vao		Shrub found in mountain forest. Latex white.	
Phaleria angustifolia, A.C. Smith		Numbu	Small tree. Tough bark used for cordage. Fruits sweet and edible. Seeds medicinal and poisonous.	
Wickstroemia foetida		Mataivi, Sinumataivi	Shrub. Medicinal; perhaps poisonous to stock.	Very tough bark suitable for making a special paper. Sometimes contains fragrant incense wood.
LECYTHIDACEAE or BARRINGTONIA FAMILY.				
Barringtonia edulis, Seem.		Vutukata, Vutukana, Vutuvala	Large tree. Edible fruit.	Bark yields saponin. Timber used.
Barringtonia racemosa, (Linn.) Blume.		Vutuniwai, Vutuwai	Littoral tree found from India to Polynesia. Medicinal; poultice for itch and chicken-pox. Fruit used to poison wild pigs.	Timber weak and useless.
Barringtonia asiatica, Kurz. (Formerly Barring-	Futu	Vuturakaraka, Vutuvala	Littoral large tree. Fruits square in section, poison-	Timber not durable, but could be used for

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LECYTHIDACEAE or BARRINGTONIA FAMILY continued.				
tonia speciosa)			ous, (saponin) crushed for fish poison.	cabinet work.
Barringtonia petiolaris, A.C.Smith.		Vutu	Tree.	
Barringtonia samoensis	Falanga		Tree.	
RHIZOPHORACEAE or MANGROVE FAMILY.				
Bruguiera conjugata	Tongo		A mangrove species. Trees of this genus have no stilt roots, but have pneumatphores rising above ground level.	Excellent firewood. Large trees could be sawn up for flooring strips. Wood hard, heavy, not durable under external conditions.
Bruguiera rheedii,Bl.	-	Ndongo	Principle and most valued tree of the Fiji mangroves. This tree may be identical with that above. Found around river mouths.	Timber hard, heavy, not durable in the open. Suitable for flooring strips. Used for firewood.
Crossostylis biflora	Lau-ma'ale'ale		Small tree in mountain forests.	
Haplopetalon seemanii, A. Gray.		Wainimara, Tirivanua		
Rhizophora mangle samoensis	Tongo (?)	-	The American species of mangrove with stilt and columnar roots.	Used for firewood or clubs. Old stilt roots can be used for bows or golf clubs.
Rhizophora mangle		Tiriwai		

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RHIZOPHORACEAE or MANGROVE FAMILY, continued.				
Rhizophora mucronata, Lam.	Seedling called Fu'a-tonga	Tiritambua, Lailai	The Asiatic species of mangrove with stilt and columnar roots. Primary colonising species.	Used for firewood, posts. Not durable in contact with the ground.
ALANGIACEAE or CORNACEAE.				
Alangium vitiense, (A.Gray) Baillon. (Syn.Marlea sp.)		Aiula ni Iula, Kauni sau	Small tree.	Wood probably durable, will season and work well.
COMBRETACEAE or TERMINALA FAMILY.				
Lumnitzera littoralis, Willd.		Sangali	Small to medium tree found in mangrove forest. Small leaves and cluster of small scarlet flowers. Coppices freely.	Excellent, durable, strong fence posts obtainable from trees. Wood suitable for cabinet work.
Termenalia catappa, Linn.	Talie, Talio-ula	Tivi, Tavola, Tavolalato	Large tree found on the coast and in inland forests from South East Asia to Polynesia. Edible fruits. Leaves turn redbefore falling in August. Forms 5% of timber cut. The oil, in the fruit is medicinally equal to almond oil.	Hard, strong wood, valued for construction of furniture. It has a crossed curly twisted grain and is elastic. Easy to work and seasons well. Is being tried in England for motor car bodies.
Termenalia littoralis, Seem.		Tavola, Tivi	Littoral tree.	Timber should be good.
Termenalia richii	Malili		One of the largest forest	Timber should be good.

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COMBRETACEAE or TERMINALA FAMILY continued.				
			trees. Deciduous, leaves fall and new ones appear from June to August.	
MYRTACEAE or MYRTIE FAMILY.				
Acicalyptus myrtoides, A. Gray.		Ndoinda	Shrub.	
Decaspermum fruticosum, Forst.	Nu'a-nu'a	Nunganunga	Shrub or small slender tree, leaves used to scent oil. Black berries eaten.	Wood never large. Fine grain, dirty color. Used for making small articles and for fence posts. Warps and splits. Firewood.
NOTE: The genus Eugenia has been renamed Syzygium, and is so referred to in some new literature.				
Eugenia brackenridgeii, A. Gray.		Songasonga	Tree.	Bark of all species astringent..
Eugenia corynocarpa	Se'a-se'a		Small tree, young purple opposite leaves chewed to cure sore throat. Flowers white fluffy. Stamens, 1 pistil in striking cyme form. Sweet small purple fruit.	Wood not used, except for firewood.
Eugenia effusa, A.Gray	Asi (1)	Yasiyasi	Large tree, various "varieties" recognized.	An important strong heavy constructional timber in Fiji.
Eugenia gracilipes, A. Gray.		Lutulutu, Siliwai, Mbongimbalewa.	Small tree.	

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MRYTACEAE or MRYTIE FAMILY continued.				
Eugenia grayii,Seem.		Ndrautangi	Shrub.	
Eugenia inophylloides	Asi-vao	Yasi (?) 1.	Large tree in the forest.	Wood hard and strong.
Eugenia jambos,Linn.		Kavika (ni vavalangi or foreign, or ni India-Indian.)	Small tree. Edible fruits, the Rose-apple.	Hard timber, too small for house building.
Eugenia malaccensis, Linn.	Nonu fia-fia	Kavika	Tree; pink and white edible tasteless but juicy fruits called Malay apple or Mountain apple of Hawaii.	Timber hard, but usually too small for use.
Eugenia neurocalyx, A. Gray.	Fena,Fena-manongi	Lemba	Shrub or small tree in low-land forest.	
Eugenia quadrangulata, A. Gray.		Vutoro	Tree.	
Eugenia richii, A.Gray.		Mbokoi,Ongori	Littoral tree.	
Eugenia rivularis,A.Gray.		Olala,Ulala,Yasi (ni wai or of the water or swamp.)	Tree.	Hard timber.
Eugenia rubescens,A.Gray.		Yasindravu	Tree.	Hard timber.
Eugenia sp.		Sea, Lalo, Sula, Ngoringori,Kaukolo, Misimisi,Sawalulu, Ngarelulu		
Metrosideros polymorpha,Gaud.		Vunga	Either a large tree, a many	The tree form yields a

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MYRTACEAE or MYRTLE FAMILY continued.				
			branched tall shrub or a parasite climbing up and eventually killing the trees. Bright red flowers, small leaves. Closely related to the New Zealand "Rata."	grey-brown strong, hard, durable timber.
Metrosideros collina	Anume		Tree of mountains. The red flowered "ohia lehua" of Hawaii.	
Psidium guajava, Linn.	Kuava	Nguava	The introduced American guava shrubby tree. Colonises and prevents erosion on waste land. Leaves give black dye and are medicinal.	Wood forms good firewood.
MELASTOMACEAE or MELASTOMA FAMILY.				
Astronidium parviflorum, A. Gray.		Mothelutu	Small tree.	
Astronidium storckii, Seem.		Thavathava, Rusila	Small tree.	
Astronia pickeringii	Matoi		Small tree in lowland forest.	Wood very hard and heavy, but of small size.
Clidemia hirta, D. Don.		Ndraunisinga, Kauniroi, Kaunisinga, Kaurasinga,	Dangerous Central American weed now spreading over South East Asia, and the Pacific. The "Koster's	This plant if ever found in Samoa should be eradicated immediately before it becomes wide-

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description.	
MELASTOMACEAE or MELASTOMA FAMILY continued.				
		Roinisinga, Mbonanambulumakau	Curse" of Fiji. Controlled in the open by the introduction of the insect, Liothrips urichi (Karny), which unfortunately, however can not tolerate as much shade as the plant. The slightly sweet fruits are edible.	spread, even if the cost is high. It prevents regeneration of tree species in the forest, and forms thickets on plantations.
Medinilla rhodochlaena, A. Gray.		Thavathavaresinga	An epiphite shrubby climber.	
Medinilla waterhousei, Seem.		Tangimauthea	An epiphitic shrub.	
Melastoma denticularum, Labill.	Moengalo, Olivevao, Siapoatua (I)	Mendrawainileva (?)	Roadside shrub, pink flowers, strawberry like fruit with reddish pulp full of small seeds, eaten by birds and dropped in forest clearings. Helps to reafforest landslides and bare areas. Known in Malaya as the "Singapore Rhododendron."	Leaves and bark medicinal. Timber small, but hard reddish yellow and variegated.
Melastoma sp.		Mendrawainiliva	Shrub.	
ARALIACEAE or GINSENG FAMILY				
Nothopanax fruticosum, Miq. (4) (Syn. Nothopanax guilfoylei (2) (Syn. Panax fruticosum, Linn (4) (Syn. Aralia guilfoylei, Cogn. & Marsch, (4))	Tangi-tangi	Ndanindani (3) (Tani-tani, Perhaps means hedges in general.)	Common cultivated hedge plant with variable leaves.	

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ARALIACEAE or GINSENG FAMILY, continued.				
Nothopanax multijugum, A. Gray.		Ndanindani (3)	Shrub.	
Plerandra pickeringii, A. Gray		Solekau, Vola, Sole	(3)	
Plerandra vitiensis, Seem.		Sole		
Polyscias (Syn. Nothopanax?) fruticosum, Harms. (4))				
Polyscias reineckei (Syn. Panax sp.)	Afia		Tree in lowland or middle forest.	
Polyscias samoensis	Afia		Tree in lowland or middle forest.	
Meryta capitata	Fangu-fangu		Small, few branched tree; large leaves.	
Reynoldsia lanutoensis	Vi-vao		Tree.	
Reynoldsia pleiosperma	Vi-vao		Common tree, large size; fleshy fruits are a favorite food of pigeons.	
MYRSINACEAE.				
Discocalyx divaricata, Gill.		Mbulumbulu	Small tree.	
Discocalyx fusca, L. Gibb.		Mbumbu	Small tree.	
Maesa densiflora, A. Gray.		Ndraumbombosange, Monitona, Tuininduna	Small tree, pioneer in recolonising abandoned land.	

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MYRSINACEAE continued				
Maesa grandis,Gill.		Ngingi	Scandant shrubby (climber?)	
Maesa lenticellata,Gill.			Scandant shrubby (climber?)	
Rapanea samoaensis, Lauterbach.	Saitama	Recorded, but not named.	Small tree in low hill forest.	
Tapeinosperma cephalophorum, Gill.		Ndasia	Small tree.	
PLUMBAGINACEAE or PLUMBAGO FAMILY				
Plumbago zeylanica,Linn.	Lau-tififi	Kenikeni	Climbing shrub. Medicinal. Dye for tattooing.	
SAPOTACEAE or SOAPY SAP FAMILY.				
Burckella thurstonii, (Hem.) H. J. Lam.		Mbauvundi,Mbausomi, Mbawaki,Sathau		
Chrysophyllum cainito, Linn.	Pipi-o-eva		Cultivated "star apple," or Caimito, the size of an apple, delicious fruit. Bark a tonic.	Timber close grained.
Lucuma vitiensis,(A.Gray) Gill. (Syn.Sapota vitiensis,A.Gray)		Ngalaka (Syn.Sideroxylon vitiensis,Burkill.)		
Madhuca sp. (Syn. Bassia sp.)		Moau,Mbausomi, Mbauvundi Mbawaki	Large tree.Fleshy fruits. Yields an inferior gutta-percha.	Good to very good timber.
Northis vitiensis,H.J.Lam.		Mbotha		

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SAPOTACEAE or SOAPY SAP FAMILY, continued.				
Palaquim stehlinii	Ngasu		Tree up to 4 foot girth.	Wood used for house posts. Very close grained, hard, heavy dark brown wood.
Planchonella garberi (Syn. Sideroxylon)	Ala'a		Tree, middle forest; 1 inch diameter fruits.	Axe handle wood. Hardest wood in Samoa, rare tree. Yellow grainless timber.
Planchonella vitiensis, Gill. (Syn Sideroxylon)		Recorded, but not named.	Tree, possible identical with above.	
Sideroxylon sp.	Mamalava	Sathau	Very large tree.	Very close grained, very strong, dark brown wood. For piles and heavy construction work.
Not identified.	Pau		Tree found in Savai'i.	Reddish heavy wood used for clubs.
EBENACEAE or EBONY FAMILY.				
Diospyros longisepala, Gill.		Recorded, but not named.	Tree.	Ebony wood tree, some white, some streaked with black, and some pure black.
Diospyros vitiensis, Gill.		Mbole	Tree.	Ebony wood tree, some white, some streaked with black, and some pure black.
Diospyros sp.		Kauloa	Small tree.	
Diospyros samoensis	Aoa-oli, Au'auli		Small to medium tree, at low and moderate elevations.	
Maba elliptica, Forst.	Anume	Tarutaru	Small tree; low elevations. Fruit perhaps edible.	Timber hard, grey with black streaks, durable, small size.

Scientific Name	Samoan Names. (2) Unless otherwise noted.	Fijian Names (3) Unless otherwise stated.	Description. Tree.	Wood.
EBENACEAE or EBONY FAMILY (continued)				
Maba nadaravatensis, Gill		Vaundrainisinga	Tree found in hill forest.	
Maba savaiensis	Anume		Small tree.	
SYMPLOCACEAE or STYRACACEAE.				
Symplocos spicata, Roxb.		Ravulevu	Shrub. Leaves mordant and yellow dye.	Timber poor. Firewood.
Symplococos leptophylla, (Brand) Turrill.		Ai susu, Roro, Vulawai, Wainimari	Small tree, probably producing a dye.	
OLEACEAE or JASMINE FAMILY.				
Jasminum australe, Pers.		Wavatu, Mbenevir-iviri	Shrubby climber.	
Jasminum sambac, Ait.	Pua-solo-solo		Woody climber, cultivated from earliest times in Egypt. Chinese name, "mo-li."	Intensely scented flowers put in women's hair, and used to scent tea.
Ximenia americana, Linn.	Moli tai		Sea shore shrub or small tree. Edible fruit. "Hog plum." Seed contains 68% oil, non drying, used for cooking. Purgative.	The Tallow-wood, hard, pleasantly scented when fresh, rather heavy, light brown to yellowish red. Powdered as a substitute for sandalwood.
LOGANIACEAE or STRYCHNINE FAMILY.				
Fragaea berteriana, A. Gray.	Pua-lulu	Mbua	Common lowland small forest tree. White lily like trumpet shaped fragrant flowers.	Yellowish white soft timber.

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LOGANIACEAE or STRYCHNINE FAMILY, continued				
			Heavy thick leaves 7" long by 4" wide. Maximum girth 6 ft.	
Geniostoma macrophyllum, Gill.		Recorded, but not named.		
Geniostoma microphyllum, Seem.		Recorded, but not named.		
Geniostoma rupestre (Syn. Geniostoma rupestris)	Taipoipo, Tai-tai-ipu	Mbatibona, Mboimboinda	Shrub or small tree.	
Geniostoma samoense	Lau-me-fati-fati		Common small tree, low forest. Orange fruits.	
Geniostoma sp.		Mbitimbiti	Scandant shrubby climber.	
Gouthouvia corynocarpa, A. Gray.		Nduva, Kauto	Tree.	
Couthouvia seemanii, A. Gray.		Mbonokonoko Olo, Langaleka	Tree, poisonous.	
Canthiopsis, odorata, Seem.		Recorded, but not named.		
Strychnos colubrina, Linn.		Recorded, but not named.	A large liane found from India to the Pacific.	Produces "snake-wood" which is used for medicinal purposes, contains brucine.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
APOCYNACEAE or OLEANDER FAMILY.				
Alyxia bracteolosa,	Lau-maile-vao, Maile	Vone,Matai,(lelevu or large.)	Large shrubby climber.	Latex Aromatic plants producing "pulasari" a white fragrant bark. Medicinal.
Gynopogon stellatum, Forst. (Syn.Alyxia stellata)	Lau-maile,Ngau, Lava,(in Savai'i) Ngau-lilii	Vono,Matai,(lalai or small)	Smaller shrubby climber. Fruits threaded into necklaces.	Aromatic plants producing "pulasari" a white fragrant bark. Medicinal.
Alyxia sp.	Lau-maile		Vine like shrubs, twining branches; fragrant flowers found in forest.	Aromatic plants producing "pulasari" a white fragrant bark. Medicinal.
Alyxia erythrosperma samoensis				
Alyxia septangularis	Lau-maile-voa, Lava (in Savai'i)			
Alyxia erythrosperma, Gill.	)	Recorded, but not named.		
Alyxia ovalifolia,Gill.	)			
Alyxia scandens, Roem.	)			
Alstonia plumosa	-	Mbulei,Sorualanda	Small tree with latex.	Very soft and light wood. "Pulai" in Malaya. Used for carved objects and coffins. Wood may be harder and darker.
Alstonia vitiensis		Sorua, Sorouia, Ndrenga	Small tree with latex.	
Carruthersia scandens, Seem.		Warerenga	Shrubby climber.	
Carruthersia latifolia, Gill.		Recorded, but not named.		
Carruthersia ovalifolia, Gill.		Recorded, but not named.		

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APOCYNACEAE or OLEANDER FAMILY continued				
Cerbera manghas,Linn. (Syn. Cerbera odollam, Guertn)	Leva	Vasa,Rewa	Common littoral forest tree; large white flowers. The genus noted for poisonous being used for arrow poisons, and for ordeal by torture. Seeds only poisonous.Bark purgative.	Wood soft,grey or white, gives fine charcoal. Tanghinin, a glucoside acts convulsively on the heart.
Ervatamia obtusiuscula, Markgraf.		Recorded, but not named.	Small tree or shrub, with poisonous and medicinal pespertins.	Wood used as incense and medicinally.
Ervatamia orientalis, (R.Br.) Turr.		Meme,Naselelevu, Nasio	Small tree or shrub, with poisonous and medicinal pespertins.	Wood used as incense and medicinally.
Excavatia vitiensis, Markgraf.	-	Recorded,but not named.	Shrub, with poisonous and medicinal pespertins.	Wood used as incense and medicinally.
Melodinus scandens,Forst.		Recorded, but not named.	Climber.	
Cochnera rosea,Reichb.	Pua-ula		A Brazilian species, slightly woody herb. Plant with pretty white or pink flowers.	Injurious to cattle. Contains substance similar to digitalin, and is a reputed remedy for diabetes.
Ochrosia parvifloia,Hemsl.	Fao	Vao,Vaoko,Vavakana, Vavaoa	Rare small sea shore tree. Nuts edible. Roots taken as antidote to the effects of eating poisonous fish and crustaceans.	Wood used locally. Timber moderately hard, and even grained.

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APOCYNACEAE or OLEANDER FAMILY continued				
Pagiantha koroana, Markgraf.) Parsonsia smithii, Markgraf.)		Recorded, but not named.		
Plumeria acutifolia, Linn. (Syn? Plumeria acuminata)	Pua-fiti	Bua (ni vavalangi or foreign.)	The franchipanni tree of Mexico. Cultivated for its fragrant flowers, and for medicinal purposes. Latex as a purge, cuttings strike easily.	Poor rubber with numerous resins, and a crystalline glucoside; a agoniadin or plumerid.
Tabernaemontana orientalis, R.Br.		Ndrengatalotalo	Tree with a poisonous latex.	An American genus.
Tabernaemontana pacifica, Gill.		Recorded, but not named.	Shrub?	
Tabernaemontana macgregori, Gill.		Tandalo	Tree.	
Tabernaemontana thurstonii, Horne ex Baker.		Tambua, Rakalavo, Tambuasere, Vuetinaitasiri	Tree or shrub. Poisonous.	
ASCLEPIADACEAE.				
Asclepias curassavica, Linn.	Pepe-toa, Vao-mumu	Recorded, but not named.	An American herb, the milk weed; medicinal and poisonous. A cattle poison. Contains ascelpiadium, a bitter yellow glucoside, which produces salivation, nausea, vomiting, diarrhoea, paralysis of the muscles, cramps, and when paralysis extends to the muscles of the heart, death.	

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ASCLEPIADACEAE continued				
			Silky hairs of the seeds can be used to stuff pillows.	
Gymnema subnadum, A. Gray.		Recorded, but not named.	Tropical climber found from Africa to India, and the Pacific.	Leaves contain paralysing glucoside.
Gymnema stenophyllum, A. Gray		Yauyau	Tropical climber found from Africa to India, and the Pacific.	Leaves contain paralysing glucoside.
Hoya australis,R.Br.	Suni-vao,Suni-tai	Mbulimbuliseware Ndraumbimbi, Wambi	High climbing vine, white vine used for adornment; leaves poisonous to sheep. Medicinal	
Hoya bicarinata,A.Gray.	Fue-se-le-la, Olive-vao	Mbulimbuliseware Ndraumbimbi,Wambi	Climbing shrubby vine, white flowers used for adornment; leaves poisonous to sheep. Medicinal.	
Hoya diptera, Seem.		Mbulimbuliseware, Ndraumbimbi,Wambi	High climbing vine, white vine used for adornment; leaves poisonous to sheep. Medicinal.	
Hoya uapoluensis	Fue-manongi		High climbing vine, white vine used for adornment; leaves poisonous to sheep. Medicinal.	
Hoya sp.	Fue-sa			
CONVOLVULACEAE or MORNING GLORY FAMILY.				
Aniseia uniflora,Chois.		Wa tumbua	A slender climber,leaves used as a vegetable.	

Scientific Name	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
CONVOLVULACEAE or MORNING GLORY FAMILY continued.				
Calonyction speciosum, Chois.		Waia, Wamila	The Moon flower; is the cultivated white flowered fragrant variety.	
Calonyction comosperma, Boj.		Waika, Tombithi	The Moon flower; is the cultivated white flowered fragrant variety.	
Cuscuta densiflora, Hook.		Naverevereilangi	A leafless parasitic herb. Medicinal.	
Ipomoea reptans, Poir. (Syn. Ipomoea aquatica, Forst, Linn.)		Ota karisi	A spinach growing on water or wet ground.	
Ipomoea batatas, (Linn) Lam.	'Umala	Kumala	The sweet potato plant; native of America, brought by Columbus to Europe.	
Ipomoea congesta, R.Br. (Ipomoea insularis, Chois.)		Wa vuti, Wa vuli		
Ipomoea pes-caprae, Linn. Roth. (Syn. Ipomoea trupethum, Holmes, (not R.Br.)	Fue-fue-tutu-fatu	Lauivi, Lawere, Wavulavula	Beach morning glory vine. Very useful as a sand-binder in dune country. Leaves taint the milk of cows. Tubers, leaves and seeds medicinal.	
Ipomoea peltata, Chois.		Viliviwa, Wa mbula Wa ndamu	Climber.	
Ipomoea turpethum, R.Brown.		Wa mbutho, Wa uvi	Climber with tubers.	
Ipomoea sp.	Tangamimi, Tanamimi		Morning glory vine, pastel mauve pink flowers	Appears on cleared land competing with "Mikania."

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CONVOLVULACEAE or MORNING GLORY FAMILY continued.				
Merremia turpethum	Fue-vao		High climbing vine, masses in forest trees. Medicinal.	
Stictocardia campanulata	Tangamimi, Tanamimi		Stout forest vine, light reddish purple flowers.	
Cordia aspera, Forst.		Tou	Tree, branches cut and put into the ground root easily.	Probably a strong wood.
Cordia subcordata, Lam.	Tauangave, Tou	Nawa nawa	Littoral tree found from Africa to Pacific, orange flowers. The Kou of Hawaii. Tokolau wood.	Hard heart wood, valued for gunstocks and musical instruments.
Messerschmidia argentea, (Linn.) Johnston.		Kauniyalewa, Roronimbembe, Samuna, Kirakira		
Tournefortia argentea, Linn.	Tausuni		Common small, crokked littoral tree; the "Tree heliotrope" silvery haired leaves. Medicinal.	Timber of little use. Used for shoe lasts.
VERBENACEAE or the TEAK and LANTANA FAMILY				
Clerodendron inerme, R.Br. and Benth.	Alo-alo-(a)-tai	Verevere	Common sea shore and mangrove shrub. White flower; sometimes a climber. Used for magic. Soft greenish brown or black fruit.	Decoction of pounded seeds taken if the stomach is upset by poisonous fish or crabs.
Clerodendron umbratile, King and Gamble (Syn. Clerodendron nutans)	Pale		White flowered small shrub. Seashore.	Decoction of root for fever during childbirth.

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VERBENACEAE or the TEAK and LANTANA FAMILY continued.				
Clerodendron amicorum, Seem.	Afa	Recorded, but not named.	White flowered shrub.	
Clerodendron americana	Manalupe, Mamangi		White flowered shrub.	
Faradaya powellii	Manalupe, Mamangi		Common robust vine in forest, fruit eaten by pigeons.	Wood brown and coarse in grain. Bark probably a fish poison.
Faradaya ovalifolia, (A.Gray) Seem. Faradaya vitiensis, Seem.	-	Wa vundi, Wa korovundi	Common robust vine in forest. Fruit eaten by pigeons.	Wood brown and coarse in grain. Bark probably a fish poison.
Lantana aculeata, Linn. (Syn. Lantana camara, Linn.		Mbona na Mbulumakau	The lantana shrub of America. Eradicated by sawing off the stem at ground level, and painting the exposed part with sodium arsinate.	Legislation against this pest is found in some countries.
Gmelina arborea, Roxb.			Tree of Burma. Useful for reclothing cleared land. Grows fast and coppices freely. A plantation species. Needs plenty of water.	Timber good, durable under water. Related to Australian White Beech. Some of qualities of English Ash.
Premna taitensis, Shauer.	Alo-alo	Tavotavo, Yaro, Nithi	Shrub or small tree in clearings in forest.	Leaves mashed for poultices.
Premna sp.		Yarokasawa	Tree.	Slim climbing or with fluting that makes the timber of little value.

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VERBENACEAE or the TEAK and LANTANA FAMILY continued.				
Stachytarpheta jamaicensis, Linn,Vahl.	Mautofu-tala, Mautofu-vao, Samoanga-uta	Thomasi,Tomasi; Kenangeleyango, Kutukutu,Turulaka, Mendrangiloilo, Maukaka raeva	Introduced weed, the "rat tail" curse. Small deep blue flowers along spike. Native of America. Medicinal.	Decoction used for ulceration of the nose.
Tectona grandis, Linn.			The true teak tree of Burma, and Siam. Introduced by the Germans. 384 seeds per lb. Light demander.	One of the best ship building timbers in the world. It will always find a market.
Verbena bonariensis,Linn.		Sekara,Vunikuta	Shrubby plant. Sometimes planted in gardens, often a weed.	
Vitex trifolia,Linn. (Syn.Vitex negundo bicolor)	Namulenga	Dralakaka, Molotaka,Volokaka	Shrub, littoral, leaves used to reduce fever. On a sandy shore the stem is horizontal,but sends up short uprising branches.	Powdered dry leaves keep insects away from clothes. Burning leaves drive away mosquitoes.
Vitex pubescens,Wahl.	-	-	Fair sized tree of Malaya-leban- used to reafforest very degraded land. Light demander.	Strong durable heartwood.
Vitex vitiensis,Seem.		Rosawa	Large tree of hill forests,rare. Leaves turn bright rusty red.	One of the best and hardest woods of Fiji.
LABIATAE.				
Coleus blumei,Benth.	La'au-fai-sei	Lata	Herb with heart shaped leaves and purple and white flowers,	

Scientific Name	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) unless otherwise stated.	Description	
			Tree.	Wood.
LABIATAE continued				
			planted for ear ornaments, grown in gardens. Medicinal. Malayaname Haiti-hali.	
Leucas decemdentata, Smith.		Recorded, but not named.	Herb of waste ground. Medicinal leaves as a poultice for wounds.	
Ocimum basilicum,Linn.	La'au saunga, Niu-moto		Cultivated large herb, base sometimes woody, pungent leaf used for seasoning, and as scent for coconut oil. Smell resembles cloves.	
Ocimum gratissimum,Linn.		Recorded, but not named	Shrubby plant up to 6 feet high.	Distilled oil contains eugenol
Plectranthus forsteri, Benth.		Latha, Sende, Ndranumi	Shrubby herb. Medicinal and Volatile oils.	
Salvia coccinea, Linn.		Recorded, but not	Herb, sometimes used as cover plant	"Oil of sage" distilled from European sp.
Teucrium inflatum, Sw.		Recorded, but not named.		
SOLANACEAE or POTATO, TOBACCO And RED PEPPER FAMILY				
Capsicum annum,Linn.	Polo-(papalangi or foreign) Polo-ula		Cultivated shrub, red peppers. An annual.	Fine drying oil
Capsicum frutsecens, Linn.	Polo-vao, Polo	Boro (ni vavalangi or foreign)	The red "Bird Pepper" shrub.	Powdered fruits.

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SOLANACEAE or POTATO, TOBACCO and RED PEPPER FAMILY continued				
		or foreign.) Rokete	Stronger than the other Capsicum.	of this species give the true Cayenne Pepper.
Cestrum diurnum,Linn.		Thauthaunimbongi		
Datura arborea,Linn.		Ndavi,Mboniwai	Introduced and natural shrub.	
Datura metel,Linn. (Syn.Datura stramonium, Linn.)		Recorded,but not named.	Very poisonous herb,probably introduced in gardens and waste. Medicinal as an anodyne.	Leaves and flowers dried, and smoked with tobacco in cigarettes for asthma.
Brachistus feddii	Ola-sina		Shrub or small tree in forest.	
Nicotiana tabacum,Linn.	Lau-'ofe-'ofe,	Tavako	Variety of tobacco; narrow leaves.	
	Lau-pua-vai,		Variety of tobacco.	
	Lau-siamani		Variety of tobacco; German leaf.	
	Lau-tao		Variety of tobacco; narrow leaves.	
	Lau-vai-tini		Variety of tobacco.	
	Lau-vai-tou		Variety of tobacco.	
	Taba'a,Ta'a-ta'a-vili-talinga		Cultivated tobacco.	
	Tapa'a		Cultivated tobacco.	
Physalis angulata,Linn.		Recorded,but not named.		
Physalis peruviana,Linn.		Mbotemboteyandra, Kospeli,Maulangua, Tukiyandra		
Solanum anthropophagorum, Seem.		Boro dina,Soumbokola.	Shrub with fruits used in cannibal feasts.	

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SOLANACEAE or POTATO, TOBACCO and RED PEPPER FAMILY continued.				
Solanum nigrum,Linn.	Mangalo, Mangalongalo, Polo-vao	Boro ni veiwere, Malahome	Cosmopolitan shrub; black berries. Eaten as a vegetable.	
Solanum lycopersicum,Linn.	-	-	The tomato plant.	
Solanum melongena,Linn.	-	-	The "Egg-plant" or Brinjal vegetable.	
Solanum ornans or uporo	Polo-ite	-	Shrub, cream white flowers; orange-red berries.	
Solanum oleraceum,Seem.	-	Boro ni Yaloka ni Ngata	Cultivated shrub.	
Solanum repandum,Forst.	-	Sou	Shrub, edible tomato like fruits. Fruiting July.	
Solanum tetandrum,R.Br.	-	Recorded,but not named.		
Solanum torvum,Sw.	-	Soni,Kauvotovotoa	Introduced prickly shrub, very bad weed in forest clearings.	
Solanum tuberosum,Linn.	-	Vateta	The cultivated potato.	
Solanum vitiensis,Seem.	Uangangi	Recorded,but not named.	Shrub or small tree in forest; red berries.	
GESNERIACEAE.				
Cyrtandra acutangula,Seem.	-	Recorded,but not named.	Shrubby plants,reputed medicinal, but probably of little use.	

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GESNERIACEAE continued				
Cyrtandra alba,Gill.	–	Mediritambua, Ndiritambua	Shrubby plants, reputed medicinal, but probably of little use.	
Cyrtandra anthropophagorum, Seem.	–	Recorded,but not named.	"	
Cyrtandra cephalophora,Gill.	–	"	"	
Cyrtandra ciliata,Seem.	–	"	"	
Cyrtandra coleoides,Seem.	–	"	"	
Crytandra denhami,Seem.	–	"	"	
Crytandra dolichocarpa,A.Gray	–	"	"	
Crytandra gillespieana,A.C.S.	–	"	"	
(Syn.Cyrtandra monticola,Gill)	–	"	"	
Crytandra glabrata,Sol.	–	"	"	
Crytandra glandulosa,Gill.	–	Mbeta levu	Shrubby plant.	
Crytandra gracilipes,Gill.	–	Recorded,but not named.	Shrubby plant.	
Crytandra godeffroyi	Atiu-vao, Fua-taulou	–	Herbaceous shrub in valley forests; large leaves.	
Crytandra harveyi,Seem.	–	Recorded,but not named.	Shrubby plants,reputed medicinal, but probably of little use.	
Crytandra involucrata,Seem.	–	"	"	

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GESNERIACEAE continued				
Crytandra kandavuensis,A.C.S.	–	Recorded, but not named.	Shrubby plants.	
Crytandra milnei,Seem.	–	"	Shrubby plants,reputed medicinal but probably of little use.	
Crytandra montana,Gill	–	"	Shrubby plants.	
Crytandra multiseptata,Gill.	–	"	"	"
Crytandra muskarimba,A.C.S.	–	Muskarimba	"	"
Cyrtandra prattii,Gill.	–	Recorded,but not named.	"	"
Cyrtandra pritchardii,Seem.	–	"	Shrubby plants,reputed medicinal, but probably of little use.	
Cyrtandra spathaceae,A.C.S.	–	"	Shrubby plants.	
Crytandra sp.	Mamaloa,Momolea	Ndreundreu,Kauvuso	Large leaved shrub.	
Crytandra taiviunensis, Gill.	–	Recorded,but not named.	Shrubby plants.	
Crytandra victoriae,Gill.	–	"	"	"
Crytandra vitiensis,Seem.	–	Mbetambiambi	Shrubby plants,reputed medicinal, but probably of little use.	

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ACANTHACEAE.				
Adenosma triflora,Nees.		Ndamoli,Ndawamoli	Aromatic herb used for perfume, and medicine. Sometimes considered a member of the Schrophulariaceae.	
Calophanes repandus,B & Hf. (Syn.Chaetacanthus repandus, A.Gray.)		Recorded,but not named.		
Dicliptera samoensis,Seem.	Peteli-vao		Common weedy herbaceous plant in open forest,from medium to high elevations. Medicinal	Young leaves and shoots serve as a flavouring for food.
Eranthemum insularam,A.Gray		Mendra suthu na mbeka, Vono ni matasawa	Shrub.	
(Eranthemum is sometimes called "Daedalacanthus". "Pseuderanthemum" is sometimes called "Eranthemum.")				
Eranthemum laxiflorum,A.Gray.		Ndrivindrivi	Shrub. Possibly and "escape."	
Graptophyllum siphonostemma, F. Muell.		Recorded,but not named.	Herb. Medicinal	
Thunbergia alata,Bojer.	Tangamimi,Tanamimi		An African herb, white or yellow flowers with purple base, now wild. Called "Black eyed Susan."	
Thunbergia erecta,T.Anderson.			Cultivated ornamental hedge plant from West Africa. Gives a good screw with no strength.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
RUBIACEAE or COFFEE FAMILY				
Bikkia grandiflora,Reinw.		Recorded,but not named.		
Coffea arabica,Linn.		Kove	The cultivated coffee tree of Arabia.	
Coffea liberica,Bull.		Kove	The cultivated coffee tree of Liberia.	
Geophila herbaceae,Kuntze (Syn.Geophila reniformis, Don.)	Lafifi,Olia'a'a		Widespread small creeping vine; found from Hongkong to Polynesia; Orange-red berries. Medicinal - contains a small amount of emetine. Taken internally arrests diarrhoea. Closely allied to the Ipecacuanha plant.	
Guettarda speciosa,Linn.	Pua-Pua	Mbuambua	Common tree. Very probably the botanical identification of the Fijian or the Samoan species is incorrect. The Fijian is an inland dry hill tree and the Samoan a littoral species. Flowers fragrant.	One of the hardest and most durable woods. Very close grained,cuts with an oily feel in wood carving, when from Fiji,yet not esteemed in Samoa.
Guettarda vitiensis,A.Gray		Recorded,but not named.		
Ixora ampilifolia	Filofiloa		Tall shrub in lowlands and foothills.	Wood hard but of small size. No economic importance.

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RUBIACEAE or COFFEE FAMILY continued.				
Ixora amplexicaulis,Gill.		Ngoro,Salera, Katakata	Shrub or small tree.	
Ixora myrtifolia,A.C.S.		Tukutuku	Shrub.	
Ixora harveyi,(A.Gray)A.C.S. (Syn.Stylocoryne harveyi, A.Gray).		Tomitomi	Shrub.	
Ixora storckii,Seem.		Kau (or wood)-Sulu	Shrub.	
Ixora samoensis	Filofiloa		Tree in lowlands.	
Ixora spp.		Sulu	Shrub.	
Ixora plagica,Seem.		Recorded,but not named.		
Ixora maxima,Seem.		"		
Ixora elegans,Gill.		"		
Ixora nandarivatensis,Gill.		"		
Ixora coronata,A.C.S.		"		
Ixora pubiflora,A.C.S.		"		
Morinda citrifolia	Nonu		Small common lowland tree grows to 20 feet high, short trunk, head ovoid in outline. Fruit ellipsoid greyish transparent	Fresh cut wood bright yellow to yellowish-brown or olive when dry. Little used. Soft. Splits easily.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
RUBIACEAE or COFFEE FAMILY continued.				
			white,smell like decaying cheese, flavour of soap and sugar. Eaten with salt. Medicinal. Juice and roots used as a dye. One of the first colonisers of new lava fields.	
Neonauclea forsteri	Afa		Large tree along streams in lowlands. Wood called calamansanay in Philippines.	Wood used for canoe paddles.
Nauclea paceficus (Syn.Sarcocephalus pacificus)	'Uav-vao		Small tree in hill forest; Large leaves. Bark,wood and leaves bitter.	Wood good for paper pulp, brittle.
Timonius affinis,A.Gray.		Ndongondongo, Ndongo (nivanua or land variety.) Mokamoka,Tiri (vanua or land variety.)	Tree resembling Rhizophora spp., but living inland. Coloniser of abandoned areas.	Timber of this genus not highly esteemed. Splits on drying.
Timonius inconspicuus		Mbombondamu Mbovundamu	Small tree.	
Timonius polygamus,(Forst) Robinson.		Recorded, but not named.		
Timonius sapotaefolius, A.Gray.		Recorded, but not named.		
Timonius spp. A.C.Sm.		Mboko ni Leketu, Ndondolala	Tree.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
RUBIACEAE or COFFEE FAMILY continued.				
Tarenna sambucina	Ma'anunu		Small tree lowlands, and foothills.	
OLDENLANDIEAE (Sometimes included in Rubiaceae).				
Hedyotis crataeogonum, Sprengel.		Recorded,but not named.	Small plant. Medicinal.	
Hedyotis foetida,(Forst) Sprengel.		Recorded,but not named.	Small plant. Medicinal.	
Lerchia calycina.A.Gray.		Recorded,but not named.		
Ophiorrhiza leptantha,A.Gray. (Syn.Ophiorrhiza laxa,A.Gray.		Ndraunikau ni Mbati, Ndraunirauniulu, Mothemothe	The "Snake-wood" genus of Shrubs much used in magic and to put a spell on an enemy. It is said (falsely) that the mongoose eats some of the plant when bitten by a snake and so cures itself.	
Ophiorrhiza peploides,A.Gray.		Thandrai,Ndindindi Ndrendrewai, Lera		
Oldenlandia paniculata,Linn,		Recorded, but not named.	Shrubby herbs, medicinal.	
Oldenlandia tenuifolia,Forst.		Recorded,but not named.		
Xanthophytum calycinum,B.& H.		Recorded, but not named.		
RONDELETIAE (Sometimes included in Rubiaceae.)				
Badusa corymbifera,A.Gray.		Mbelembele	Shrub.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
RONDELETIAE (sometimes included in Rubiaceae) continued.				
Dolicholobium oblongifolium, A. Gray.		Recorded, but not named.		
Dolicholobium latifolium, A. Gray.		Mbuambua (nimbaravai, of Mbaravai.)	Tree.	
Dolicholobium longissimum, Seem.		Sosoniura	Tree.	
Dolicholobium macgregori, Home ex Baker.		Na Ura	Tree.	
GARDENIEAE (Sometimes included in the Rubiaceae).				
Gardenia taitensis, D.C.	Pua-Samoa, (Tiale is the name of the flower.)	Mbua	Cultivated Gardenia shrub; white fragrant flowers.	
Gardenia vitiensis, Seem.		Tiale	Shrub.	
Mussaenda frondosa, Linn.		Mbovu	Climbing shrub; Medicinal.	
Mussaenda frondosa piloss-issima.	Fu'a-i-tausanga, Laupaepae		Climbing shrub, white bracts from outer flowers; blue and white berries. (Yellow corolla, blue berries?) Medicinal.	
Mussaenda spp.	Alo-alo-vao		Epiphytic shrub in forest; white calyx. Medicinal.	
Plagodendron vitiensis, Seem.		Recorded, but not named.		

Scientific Name	Samoan Names (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
GARDENIEAE (Sometimes included in the Rubiaceae.) continued.				
Sukunia pentagonioides,A.C.S. (Syn.Gardenia pentagonioides, Seem.)		Nailomaniwase	Shrub.	
COFFEOIDEAE (Sometimes included in the Rubiaceae.)				
Canthium barbatum,Seem.		Recorded, but not named.	Small tree.	Some species very hard durable wood, resembling boxwood.
Canthium recti-nervium,A.C.S.		Nggaunggau	Tree.	
Canthium sessiflorum. (Syn.Plectronia sessiflorum.)				
Canthium fladium (Syn.Plectronia fladium, A.C.S.) (Syn.Dorisia flavida, Seem.)		Reiova.		
Canthium odoratum. (Syn.Plectronia odoratum, Seem.) (Syn.Canthiopsis odoratum.)		Ndraunivindi; Nanokonisavu, Waliningio	Shrub.	
PSYCHOTRIEAE (Sometimes included in the Rubiaceae.)				
Abramsia trichotoma,Gill.		Recorded, but not named.		
Antirrhoea inconspicua, Christopherson. (Syn. Guettarda inconspicuus,Seem.)		Tambutasia		

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PSYCHOTRIEAE (Sometimes included in the Rubiaceae.) continued				
Calycosia petiolata, A.Gray. (Syn.Uragogo petiolata, (A.Gray,) Gill.)		Tarotaro	Shrub.	
Calycosia lagenformis, (Gill.) A.C.S.		Kauyalewa	Small tree.	
Calycosia sessilis, A. Gray. (Syn.Uragoga forsteriana, K. Schumann.)		Recorded, but named.		
Calycodendron glabrum (Turrill) A.C.S.		Recorded, but not named.		
Calycodendron magnificum, (Gill) A.C.S.		Recorded, but not named.		
Calycodendron gibbsiae, (S.Morre) A.C.S.		Recorded, but not named.		
Calycodendron rufescens, A.C.S.		Recorded, but not named.		
Calycodendron pubiflorum, (A.Gray) A.C.S.		Recorded, but not named.		
Calycodendron milnei, (A. Gray) A.C.S.		Kauwai	Shrub.	
Geophila herbaceae, Kuntze (Syn.Geophila reniformis, Don.)	Lafifi		Small creeping herb. Medicinally for poultices, and a decoction cures diarrhoea.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PSYCHOTRIEAE (Sometimes included in the Rubiaceae.) continued.				
Geophila reniformis (Cham.) Schott.		Totondronivukau	Shrub; Medicinal. Identical with above?	
Gynochthodes ovalifolia, (Valeton) Kanehira.		Recorded, but not named.	Slender climber. Decoction of leaves and roots said to cure stomach-ache.	
Hedstromia latifolia A.C.S.		Mbulei	Small tree.	
Hydnophytum longiflorum, A. Gray		Seke	Woody tuberous epiphytic shrub.	
Myrmecodia imberbis, A.Gray.		Recorded, but not named.	An ant tenanted tuberous spiny epiphytic shrub.	
Psychotria infundebulifera	Ala'a		Unbranched shrub in low hill forest.	
Psychotria insularam	Lau-ma-fati-fati Lau-matifati		Small tree of lower hills; white flowers. Orange fruits.	
Psychotria samoana	Matalafi		Shrub or small tree, mountain forest. White flowers; orange-red fruits.	
Psychotria pacifica	Ala-vao		Shrub in forest.	
Psychotria forsteriana	Siapo-atua		Shrub or small tree.	
Psychotria dolichocarpa	U'umu		Small tree in forest.	
Psychotria browerii, Seem		Recorded, but not named.		

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PSYCHOTRIEAE (Sometimes included in the Rubiaceae.) continued.				
Psychotria pritchardii, Seem.		Recorded, but not named.		
Psychotria brackenridgei, A. Gray.		Recorded, but not named.		
Psychotria turbinata, A. Gray		Recorded, but not named.		
Psychotria storckii, Seem.		Recorded, but not named.		
Psychotria gracilis, A. Gray		Recorded, but not named.		
Psychotria calycosa, (A. Gray) (Calycosia monticola, Gill.)		Recorded, but not named.		
Psychotria macrocalyx, A. Gray.		Recorded, but not named.		
Psychotria pelagica, Seem.		Recorded, but not named.		
Psychotria hypargyraea, A. Gray		Recorded, but not named.		
Psychotria costata, A. Gray.		Recorded, but not named.		
Psychotria tetragona, Seem.		Recorded, but not named.		
Psychotria bullata, Seem.		Recorded, but not named.		
Psychotria platycocca, A. Gray.		Recorded, but not named.		
Psychotria taviunensis, Gill.		Recorded, but not named.		
Psychotria gibbsiae, S. Morre.		Recorded, but not named.		

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PSYCHOTRIEAE (Sometimes included in the Rubiaceae.) continued.				
Psychotria griseifolia,S.Morre.		Recorded, but not named.		
Psychotria caldwelli,Gill.		Recorded, but not named.		
Psychotria haemisphaerica,Gill.		Recorded, but not named.		
Psychotria levuensis,Gill.		Recorded, but not named.		
Psychotria neurocalyx,Gill.		Recorded, but not named.		
Psychotria selchelli,Gill.		Recorded, but not named.		
Psychotria vomensis,Gill.		Recorded, but not named.		
Psychotria pachyantha,A.C.Sm.		Recorded, but not named.		
Psychotria edentata,A.C.S.		Recorded, but not named.		
Psychotria gillespiana,A.C.Sm. (Syn. Calycosia laxiflora,Gill).		Recorded, but not named.		
Psychotria tephrosantha,A.Gray. (Syn.Psychotria sulphurea,Seem.		Wa Kau	Shrubby climber.(Yellow flowers?)	
Psychotria pickeringii,A.Gray.		Ndelandrenga	Shrub.	
Psychotria filipes,A.Gray		Ndoko ni Vole Kauthoko ni Vole	Common forest shrub.	
Psychotria umbraticola,Gill.		Tambulina	Small tree.	Wood probably hard.
Randia graeffei	Aso, Ola-mea		Shrub in coastal and lowland for-	Trees probably with hard woods.

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
PSYCHOTRIEAE (Sometimes included in the Rubiaceae.) continued.				
			est; white flowers	
Randia odorata,(Seem)B.& H.		Recorded, but not named.		Trees probably with hard woods.
Randia tenuiflora,A.C.S.		Sulu	Small tree.	Trees probably with hard wood.
CUCURBITACEAE or PUMPKIN FAMILY				
Citrullus vulgaris Linn.	Meleni		Cultivated Water Melon. Cultivated from remote times in Egypt.	
Cucumis acidus, Linn.		Timo	A local melon.	
Cucumis melo,Linn.			The Melon. Musk Melon or Cantaloupe.	
Cucumis cavitus,Linn.			The Cucumber.	
Cucurbita pepo, Linn.		Wavukeni	The Vegetable Marrow.	
Lagenaria Cucantha Rusby (Syn.Lagenaria vulgaris, Ser.)		Vango	The Bottle Gourd,Calabash Cucumber. Pulp of seed is purgative.	The outer skin of the gourd is hard and can be used as a vessel to carry water and for musical instruments.
Luffa cylindrica Roem. (Syn.Luffa aegyptiaca,Roxb.)		Vusovuso	Shrubby climber bearing the loufah or Dish-rag gourd.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
CUCURBITACEAE or PUMPKIN FAMILY continued.				
Luffa cylindrica insularam	Meleni-vao		Vine climbing over trees.	
Melothria samoensis	Meleni-vao		Slender vine climbing over bushes in lowland areas.	
GOODENIACEAE				
Scaevola floribunda,A.Gray.		Ndurumbi	Small tree.	
Scaevola frutenscens Krauss (Syn.Scaevola koenigii, Vahl.)	To'i-to'i	Ndirendre,Kativari Kirakira, Vevendu	Common shore shrub, white flowers, white fruits. Widespread in Polynesia. Bitter leaves eaten as a cure for indigestion. Pith can be cut into flowers.	Scaevolin and another glucoside is present. Wood scanty but strong and durable. Used for treenails in boats.
COMPOSITAE or Daisy Family				
Adenostemma loevenia, Kuntze (Syn.Adenostemma viscosum, Forst)		Recorded, but not named	A pantropic weed. Esteemed for poultices.	Contains a bitter substance, probably of a glucosidic nature.
Ageratum conyzoides,Linn.	A'a-mia, Lau-tai-oti	Mbolembotekoro Songovanua	A common pantropic weed in coastal regions and forests. Medicinal both externally and internally.	
Bidens pilosa, Linn.		Mbatimandramandra (?)	A Pantropic weed, The Spanish Needle, a herb from America. Medicinal.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
COMPOSITAE or Daisy Family continued				
Blumea balsamifera D.C. Prodr.		Not recorded.	The Ngai Camphor Plant. Medicinal herb.	
Blumea densiflora,D.C. Prodr.		Recorded, but not named.	Often mistaken for the above. A herb.	
Blumea Milnei, Seem.		Recorded, but not named.	A herb.	
Blumea Virens, D.C.Prodr.		Recorded, but not named.	A herb.	
Dichrocephala latifolia, D.C.Prodr.		Recorded, but not named.	Herb found from S.E.Asia to Polynesia. Medicinal.	
Eclipta prostrata,Linn.		Tumandu,Tumundi, Tholulu	Herbaceous weed. Medicinal, leaves boiled in oil are a hair tonic.	
Emilia sonchifolia,(L.) D.C.Prodr.	Fua-lele-lili'i Meleni-vao	Luzeluze	Common herbaceous weed. "Flora's paint brush". Edible as a salad. Medicinal.	
Erechtites valerianaefolia, D.C.Prodr.	Fue-lele	Thovuka	Weed of tropical America now spread all over the tropics.	
Glossogyne tenuifolia,Cass.		Recorded, but not named.		
Helianthus annuus,Linn.		Matanisinga	The introduced sunflower. Native of America. Yields an oil. Disc of flowerhead edible like Jerusalem artichoke.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
COMPOSITAE or DAISY FAMILY continued.				
Lagenophora pickeringii, A. Gray		Recorded, but not named.		
Mikania scandans,Willd.	Foue sina (Or Chinese creeper)	Wa Mbosuthu Wa Mbutako	Mile-a-minute. Scandant cover-crop. Introduced into Samoa at same time as Chinese labour about 1900. Herb, aromatic; leaves used to scent oil and to alleviate hornet stings.	Very rapid growth. Prevents immediate erosion but kills tree growth.
Sigesbeckia orientalis, Linn.	A'a-a'a	Recorded, but not named.	A weed found all over the tropics.	A sudorific and stimulant taken internally. Externally applied to sores.
Sonchus asper, Vill.		Recorded, but not named.	A weed, edible as a salad.	
Synedrella nodiflora Caertn (Syn.Balinvillea latifolia,Rid.)	Lau-oti-oti		An American Weed, used medicinally.	
Wedelia canescens	Ate-ate		Common herb in abandoned plantations. Medicinal.	
Wedelia stringulosa,D.C.		Sekawa	Herb.	
Tridax procumbens Linn.		Tumbualeka	Herb found all over the tropics. Cattle eat it.	There is much potash in the plant.
Zinnia spp.		Matanisinga	The cultivated zinnia.	

Scientific Name.	Samoan Names. (2) Unless otherwise noted.	Fijian Names. (3) Unless otherwise stated.	Description. Tree.	Wood.
BIGNONIACEAE.				
Spathodea companulata,Beauv.	-	-	The African Tulip tree. Flowers freely, especially in October. Red showy flowers. Fast growing.	Wood white, weak and brittle. Possibly usable.
MONIMIACEAE.				
Hedycarya denticulata	La'au-fai-vaitusi		Small tree, "ink berry".	
PASSIFLORACEAE or PASSION FRUIT FAMILY.				
Passiflora edulis,Sims. and) Passiflora laurifolia,Linn.)			The cultivated passion fruit vine.	
Passiflora quadrongularis,Var. macrocarpa, Linn.			The cultivated grenadilla vine.	
Passiflora samoensis	Pasio-vao		Passion flower vine. Conspicuous purple and white stamens. Found wild near Vailima, Apia.	
PUNIACEAE or POMEGRANATE FAMILY.				
Punica granatum,Linn.	Limoni		Cultivated pomegranate tree.	Hard wood used for small articles.

APPENDIX II. (B)

GUTTIFERAE.

CALOPHYLLUM SPP.

TAMANU, Calophyllum samoense of Samoa.

DAMANU, Calophyllum burmanii, (Wight) and Calophyllum spectabile, Willd. of Fiji.

BINTANGOR, BUNUT, MENTANGOR, and PENAGA AYER, of the 26 species of Calophyllum genus of Malaya.

DISTRIBUTION: Representatives of the genus are found throughout the eastern tropics, and the Pacific Islands.

ABUNDANCE AND MANNER OF DISTRIBUTION: A common tree, scattered throughout the inland forests, from sea level up to 5,000 feet, on a variety of soils, but usually on well drained land. Frequently occurring to the amount of one tree per acre and making up as much as one per cent of the volume of the forest. Usually about one tree to five acres.

DESCRIPTION.

HABIT: Straight, slender trees of the second storey, usually without buttresses. In the Pacific Islands often one of the largest dominant tree in the forest. Crown usually rather open and made up of a few rather large branches. Spread of crown usually less than two thirds of the total height of the tree. Trees as much as 120 feet in height, and 60 or 70 feet to the first branch have been found. 1,461 trees measured, in valuation surveys in Malaya, had an average diameter of 16 inches, the maximum being 32 inches.

BARK: Grey or yellowish, longitudinally fissured. The inner side of the epidermis is yellow and this colour sometimes shines through, and gives a yellow tinge to the bark. Inner bark pink or reddish,

with milky sap which is white or cream colored. The bark of large trees is shallowly longitudinally fissured.

LEAVES: Opposite, simple, without stipules, coriaceous, entire, with very numerous, slender, parallel secondary nerves nearly at right angles to the midrib. The underside of the leaf is, in some forms, brownish pubescent.

FLOWERS AND FRUIT: Flowers white, often conspicuous, in panicles. Fruit a drupe with thin fleshy covering. Seed sometimes containing oil.

SEEDLING: With leaves of the same form and much the same size as those of the mature tree.

PRODUCTS.

WOOD: Moderately hard or soft, moderately heavy or light, with distinct difference between sapwood and heartwood. Sapwood very pale or whitish and not useful. In some forms the sapwood makes up a very large part of the thickness of the trunk, and such forms are practically useless, except for firewood. Heartwood yellowish or reddish brown. Excellent for masts, spars, and other uses which require a good deal of stiffness; very satisfactory for furniture because of the straight grain and the very pretty figure on tangential sections. It is usually undesirable to use for furniture any tree which is less than 18 inches in diameter.

BARK - Sometimes used as a fish poison.

FRUIT - The small and rather sour fruit of some species is eaten.

GUM:- Some forms have a resin or gum in the bark, and this flows out as a result of injuries. The resin is sometimes mixed with

coconut oil, and used in the treatment of skin diseases.

RATE OF GROWTH - 185 trees have been measured (to that date in Malaya) and average annual girth increments of 0.7 to 1.085 inches have been shown.

REPRODUCTION - Natural regeneration seem to be ample, and the tree seems to be succeeding fairly well. Grows well from seed which has usually a very good percentage of germination, but regeneration under the parent tree and in high forest is scanty.

A related form is Calophyllum inophyllum, Linn, found on sea beaches.

CALOPHYLLUM INOPHYLLUM, LINN.

FETAU of Samoa. NDILO of Fiji.

PENAGA LAUT of Malaya.

DISTRIBUTION: Found throughout the Eastern tropics on sandy sea beaches and rocky ground near the shore. It is also frequently cultivated.

HABIT: A small tree with short stout often crooked trunk, and wide spreading crown made up of a number of large branches, some of them drooping at the ends. The thick trunk is rarely upright, often leaning towards the sea. Trees with a clear trunk of as much as 20 feet are sometimes found. Total height sometimes as much as 60 feet, the crown making up two-thirds or more of the total height. Girth up to 12-14 feet, no buttresses.

BARK: 0.5 - 0.8 inches thick, grey or brownish in color, often with a yellowish tinge. Large trees have deep longitudinal fissures, but young trees do not show them. The bark also splits into

transverse fissures and is shed in rectangular pieces. Inner bark pink to yellowish or reddish, with concentric bands of darker color. W hen cut the bark exudes a brownish-yellow sticky sap.

LEAVES: Opposite, simple, without stipules, shining, glabrous with very numerous parallel nerves at right angles to the midrib, oblong, elliptic or obovate-oblong, obtuse or emargenate, the base acute, 4 - 6 inches long, 2.5 - 3.5 inches wide; petiole rather broad, 0.75 inches long.

FLOWERS AND FRUIT: Flowers pure white, showy, with yellow stamens, in axillary or terminal racemes, fragrant. Fruit globose, 1 inch in diameter, smooth, green or yellow, pulpy on the outside. Seeds containing oil.

SEEDLING: Leaves of the same form as those of the mature tree. The first leaves are distinctly smaller than those of the mature tree. Young leaves yellowish green.

PRODUCTS.

WOOD: Moderately hard and moderately heavy, grain so twisted that the wood can hardly be split. Sapwood white and making up only a small part of the thickness of the stem. Heartwood brownish or pinkish brown, with very pretty figure, because of the contorted grain. An excellent wood for furniture, whenever it can be had in sufficient quantity, but very difficult to work and requiring an unusual amount of polishing. Used principally for the knees, ribs, stem and stern posts of small boats. Very durable in sea water.

BARK: The bark is boiled and used medicinally for troubles of the genital organs.

LFAVES: When the leaves are put in water an oil rises to the surface. This is used in some parts of India as a remedy for sore eyes. In the Netherlands Indies it is said that water in which the leaves have been soaked over night becomes a bluish color and is refreshing when used to bathe inflamed eyes.

GUM OR RESIN: A yellowish or brownish gum or resin exudes from cuts in the bark and is used medicinally for the same purposes as the bark. The resin yielded by the trunk is one of the tacamahae gums of commerce. It is agreeably aromatic. It is of a yellowish green color and is soluble in alcohol.

FLOWERS: The fragrant flowers are worn as a hair adornment when fresh, and, when dried, are used to scent clothing.

FRUIT: The half ripe fruit is sometimes pickled and the scanty pulp eaten. The seed, when left in the sun, sweats a yellow oil, which is poisonous when taken internally, but which is used as a medicine externally for skin diseases and rheumatism. It is also used as a lamp oil and is said to be suitable for the manufacture of soap.

SYLVICULTURE.

RATE OF GROWTH: Cultivated trees seem to grow rather slowly; there are no sample plot records.

REPRESENTATION OF SIZE CLASSES. - Very poor.

REPRODUCTION: Natural regeneration is rather scanty. It is said that the fruit will germinate readily when fresh, but it does not retain its vitality very long.

From Malayan Forest Records No. 9,
of 1930.

RATE OF GROWTH IN MALAYA OF CALOPHYLLUM WELLICHIANUM. PL. AND TR.

Takes 66 years to reach 5 feet girth, and appears to put on its best increment after a girth of 4 feet is reached. Probably tolerant of shade. Measured in Selangor Sample Plots 3, 7, and 9, all in the Bangi Forest Reserve. Total Measurements 291. Mean Annual Girth Increment of all trees "Dominant" or "Dominant in Understorey" - all plots .89 in.

Diameter Class.	Girth Class.	Number of Measurements.	Mean Annual Girth Increment.	Number of yrs. to pass through class.	Rate of growth as calculated. Gth.	Rate of growth as calculated. Age.	Rate of growth from curve. Age.	Rate of growth from curve. Gth.
Inches.	Inches.		Inches.		Ins.	Yrs.	Yrs.	Ft. Ins.
0-3.8	0-12	44	.93	13	12	13	10(a)	. 0
							20	1 - 5
3.8-7.6	12-24	97	.80	15	24	28	30	2 - 2
							40	2 - 11
7.6-11.5	24-36	32	.95	13	36	41	50	3 - 8
							60	4 - 4
11.5-15.3	36-48	11	.84	14	48	55	70	5 - 1
							80	6 - 0
15.3-19.1	48-60	9	1.10	11	60	66	(d)	(d)
19.1-22.9	60-72	4	1.10	11	72	77	(d)	(d)

Notes: (a) Nothing has been added for the time required for the establishment of the seedling.

(b) The smallest individual tree measured had a girth of 6.2 inches.

(c) Individual trees planted in young secondary forest reached a height of only 63 inches in 3 years from seed.

(d) Too few measurements to produce a reliable figure.

APPENDIX II. (B)

CASUARINA EQUISETIFOLIA, FORST.

TOA of Samoa.

NOKONOKO of Fiji. of Malaya.

CASUARINACEAE.

DISTRIBUTION: Found throughout the eastern tropics and Pacific islands.

ABUNDANCE AND MANNER OF DISTRIBUTION: It occurs in a very narrow belt along the sandy sea beach, in which location it sometimes forms a pure forest. It frequently marks the line of an old sea beach. The total amount of it occurring under natural conditions is very small, but it is found as a planted tree. In Fiji it occurs as almost the only tree form on the dry eroded semi-sterile hills of the dry zones where almost annual fires burn the grass.

DESCRIPTION:

HABIT: Tall, slender trees, looking very much like pines, when viewed from a distance. Crown open, narrow, irregular, made up of numerous small branches, and taking up most of the height of the tree. Trees as much as 150 feet in height and 10 feet in girth have been measured, and trees 100 feet in height and four feet in girth are common. The branches are often within 5-10 feet off the ground, but the trunk is useful up to 80 feet or more. The spread of crown is often not more than 30-40 feet, but may be as much as 50-60 feet.

BARK: 0.2-0.5 in. thick, brown to dark brown in color, smooth when young, roughening in old trees into fine ridges of greater or less length; the inner bark is light rose in color and has a bitter taste.

LEAVES: Reduced to small scales, usually seven at a node; in their place are thickly set jointed branchlets, which give the tree the general appearance of a pine, there being a good deal of chlorophyll in the young branchlets.

FLOWERS AND FRUIT: Partially monoecious. Some trees bear only female flowers and cones, and appear to produce a large proportion of durable heartwood while others having male and female flowers produce far less heartwood, and are not valued as posts or pitprops. This characteristic which may apply only to a local race was noted in the Drekiti area of Vanua Levu, Fiji. The male flower clusters are borne in small yellow catkin like tassels near the end of the branch. The female consists of a cluster of small shiny scarlet pistils on short woody branches lower down. The ripe fruit is a cone which is rather woody, and 3/4-1 inch long and 0.5-0.7 in. in diameter. When ripe the individual cells burst open and release the small winged seeds, which are distributed by the wind.

SEEDLING: The seed leaves are a small pair, but, following these, all of the leaves are reduced to scales, as in the mature tree.

NITROGEN FIXATION: A nitrogen fixing fungal mass is found around the roots and enables this species to thrive in almost sterile localities.

PRODUCTS.

WOOD: The wood is very heavy, very hard, and fairly durable. There is a change in colour from sapwood to heartwood and both are useful. The wood can be used for house-posts, but is likely to be attacked by white ants in time. The principal use is for firewood, and for that purpose it seems to have no superior.

BARK: The bark furnishes a yellow dye which is sometimes used to color wool and silk. There is also said to be an appreciable amount of tannin in the bark.

SYLVICULTURE.

LEAF-SHEDDING: Pieces of the jointed branches are shed throughout the year and often form a distinct layer on the ground under the trees.

FLOWERING AND FRUITING: This tree has been found in flower in all months except June, July, and September, and in fruit in every month of the year, in parts of India it is said to flower and fruit twice during the year. It is frequently the case that trees planted inland do not bear fertile fruit.

RATE OF GROWTH: Under favorable conditions, growth is very rapid and height growth has been known to average as much as ten feet per year for seven years. Trees may grow to more than 100 feet in height and 18 inches in diameter in less than 25 years. It is believed that the tree is naturally rather short-lived.

REPRESENTATION OF SIZE CLASSES. - Poor.

REPRODUCTION: Natural regeneration is good and sufficient, in a few favorable localities, but such localities are so few that it is necessary to plant. Coppicing is difficult, but layering sometimes takes place from the lower branches. It has proved to be a very successful firewood crop, in parts of the Madras Presidency. It requires well drained soil, preferably sandy. On clay or water logged soil, the plant is likely to die out. It is believed, in India, that the tree is rather short lived, and will not do well after 50 years, or in less favorable situations after 25 years.

It is said in India not to thrive very well in plantations at a considerable distance from the sea coast. The seedlings are very subject to insect attack, and are very tender during their first two years. After this, they do well and are not hard to handle, and give a big yield of firewood, after ten to fifteen years. Said to yield 3-7 tons per acre per year.

Experimental planting did fairly well in Malaya and gave a good crop of firewood after 20 years on old mining land.

The appearance of the tree, when seen from a distance, is very similar to that of certain conifers, and travellers have often described the trees as pine, fir, spruce, or larch accordingly, as they were better acquainted with one or another conifer. Any close inspection would show that the two are very different.

From Malayan Forest Records No. 3 of 1927.

LEGUMINOSAE

Intsia (or Afzelia) spp.

IFILELE of Samoa.

VESI of Fiji: MERBAU of Malaya: IPIL of the Philippine Islands

DISTRIBUTION: This genus is found from East Africa, through Southern Asia and the Malay Archipelago to the Philippine and South Sea Islands.

ABUNDANCE AND MANNER OF DISTRIBUTION: The form known as Ipil (Intsia bijuga) is usually found just back of the coast, at the inner edge of the mangrove swamp, on flat or swampy land. The inland species are usually found in alluvial soil along river valleys, but may occur on ridges and low hills up to as much as 1,200 feet above sea level.

The total amount of this tree is not great. It makes up less than one per cent of the trees of commercial size and there is usually about one tree to five acres in good forest.

DESCRIPTION.

This description applies principally to Intsia Bakeri, Prain.

HABIT: Large trees of the forest or second story, with rather crooked stems, large buttresses, and wide spreading open crowns. Spread of crown about 100 feet. Taper about one inch in six feet. Sometimes 130-150 feet in height and 60-75 feet to the first branch. 1,129 trees measured had an average diameter of 26 inches; the maximum being 64 inches. Reports of particularly large planks and baulks have sometimes been obtained indicate that the tree is sometimes larger than is shown by the measurements recorded, and it can probably be safely said that there are occasional trees as much as six feet in diameter.

BARK: Unfissured, with numerous shallow depressions, where irregular, thin pieces have been shed, leaving an effect like pock marking, grey, or rusty brown in the pitted places, brown lenticellate or pustular on the surface; 0.3 in. thick. Epidermis very thin, dark green, with an indication of yellow outside. Inner bark red-brown, grading off to white or very pale inside, fibrous. Dark oil spots beginning to show on inner bark not long after exposure to air. Outside of bark frequently stained by dark colored exudations of oil.

LEAVES: Alternate, compound, even-pinnate, leaflets 2 - 4 pairs, glabrous, shining coriaceous. Stipules small.

FLOWERS AND FRUIT: Flowers numerous, whitish, in terminal corymbrose panicles. Fruit a thick woody pod, seeds not arillate.

SEEDLING: After germination the cotyledons are raised above the ground; the stem elongates rapidly, and the leaves of the first pair are of full size, but the leaflets are narrower than in the mature form.

DISTINCTION OF SPECIES: Intsia bijuga, O.Ktze. (Afzelia bijuga, A. Gray) and Intsia retusa, O.Ktze. (Afzelia retusa, Kurz) have only two pairs of leaflets, a pod not more than 8 inches long, and grow near the sea, often just back of the mangrove. The differences between these two are very slight. Intsia bakeri, Prain, (Afzelia palembanica, Baker) is found in inland forests. It has usually four pairs of leaflets, a pod more than 10 inches long, a much more wide spreading crown, and has much more pronounced buttresses.

PRODUCTS.

WOOD: Dark brown with, in some species, yellow deposits, very heavy, very hard, very durable, but corrodes steel. Sapwood in large amount in small trees, white and not durable and needing to be removed. Trees 16 inches in diameter have been found to have sapwood three inches thick, taking up six inches of the diameter. Very large trees may have a very small amount of sapwood. It seems undesirable to cut these trees until they are at least two feet in diameter. This wood is very useful for heavy construction and for furniture.

DYE: Occasional deposits of a yellow or brownish rather oily substance are found in cavities in the wood and in the bark. This substance makes a very lasting stain and is used in the manufacture of various brown, and yellow dyes for use in mat and cloth making. Dye can also be prepared by boiling the heartwood.

SYLVICULTURE.

DECIDUOUS HABIT: This tree sheds all of its leaves and remains leafless for some days each year, but we have no record to show the time at which this occurs.

DATE OF GROWTH: Rather slow. The sample plots have contained 398 trees and the average annual girth increment was 0.58 in.

REPRESENTATION OF SIZE CLASSES. - Poor

REPRODUCTION: There is a fair amount of natural regeneration. The tree coppices freely. The seeds are large, hard shelled, and may remain on the ground a long time before germinating. From one fourth to one half of the seeds germinate. Growth is rapid so long as the stored nourishment of the seed is drawn upon; after this it is slow. Young plants are often of very bad shape and tend to droop a great deal, besides branching very low. If the young tree reaches a height of 25 or 30 feet, it acquires a much better shape. Our experience is limited, but does not offer as much promise of success as a plantation crop as is possible with other species. The tree would be a valuable addition to mixed forest.

OTHER FORMS LIKELY TO BE CONFUSED WITH THIS TREE.

POMETIA PINNATA, FORST. This form is usually of much smaller size than this tree. Its leaves are very distinct and are red when young. Large trees of this species may have bark resembling that of "Intsia", but smoother.

From Malayan Forest Records No. 9 of 1930.

RATE OF GROWTH IN MALAYA OF INTSIA BAKERI, PRAIN.

Takes 81 years to reach 5 ft. girth. Measured in Selangor Sample Plot

9, Bangi Forest Reserve; and Selangor Plot 15, Sungai Lallang Forest Reserve. Total measurements 727. Mean Annual Increment of all trees "Dominant" or "Dominant in the Understorey" - all plots .72 in.

Diameter Class.	Girth Class.	Number of Measurements.	Mean Annual Girth Increment.	Number of yrs. to pass through class.	Rate of growth as calculated. Gth.	Rate of growth as calculated. Age.	Rate of growth from curve. Age.	Rate of growth from curve. Gth.
Inches.	Inches.		Inches.		Ins.	Yrs.	Yrs.	Ft. Ins.
0-3.8	0-12	4	.60	20	12(b)	20	10	. 5(b)
							20	1 0
3.8-7.6	12-24	121	.75	16	24	36	30	1 6
							40	2 3
7.6-11.5	24-36	98	.92	13	36	49	50	3 1
							60	3 10
11.5-15.3	36-48	128	.83	14	48	63	70	4 6
							80	5 1
15.3-19.1	48-60	141	.65	18	60	81	90	5 7
							100	6 1
19.1-22.9	60-72	60	.81	15	72	96	110	6 5
							120	6 8
22.9-26.7	72-84	64	.42	29	84	125		
Over 26.7	Over 84	34	.47					

Notes: (a) Nothing has been added for the time required for the establishment of the seedling.
(b) Too few measurements for figures to be regarded as accurate.
(c) The smallest individual measured had a girth of 11 inches.
(d) The largest individual planted in the nursery had a height of 13 ft., and a girth of 6.75 inches at 4 years from seed.

(I) Air dry weight 45 lb. to 55 lb. per cubic foot.

(2) Allowable working stresses in lb. per square inch, calculated from tests on clear specimens in green condition, and are applicable to good timber without serious defects.

	Strength in Bending	In compression parallel to the grain.
(a) In dry places under cover ..	2,150 lb.	1,700 lb.
(b) Outside, not in contact with ground ..	1,800 lb.	1,500 lb.

(c)	In wet places	..	1,600 lb.	1,200 lb.
	Shear along the grain.. 150 lb.			

It is of slow growth, probably reaching maturity at an age of 140 years.

A P P E N D I X III.

METEOROLOGICAL DATA.

(A) I) YEARLY FIGURES.

II) MONTHLY FIGURES.

(B) YEARLY GRAPH.

Appendix IIIA

Year	RAINFALL IN INCHES PER ANNUM. Pagopago	Apia	MINIMUM TEMPERATURE. Apia
1890		119.51	
1891		101.04	
1892		148.55	
1893		88.41	
1894		89.20	
1895		115.69	
1896		87.58	
1897		99.75	
1898		123.45	
1899		115.66	
1900	167.2	81.44	
1901	177.3	105.21	
1902	167.6	81.18	
1903	199.3	125.57	
1904	176.1	133.15	
1905	130.1	69.50	
1906	147.3	85.56	
1907	222.1	127.47	
1908	284.4	172.71	
1909	145.1	71.23	
1910	198.5	111.90	64.0
1911	149.8	82.01	65.3
1912	195.4	77.23	64.2
1913	275.2	125.16	67.1
1914	250.6	104.97	66.2
1915	256.3	93.54	63.3
1916	206.1	143.59	67.8
1917	249.9	126.79	63.0
1918	206.9	96.69	66.6
1919	174.9	86.69	64.2
1920	257.1	126.01	65.5
1921	186.1	119.50	68.2
1922	205.6	132.96	66.4
1923	216.8	148.54	65.3
1924	196.1	119.01	68.9
1925	184.6	103.38	67.3
1926	202.2	103.58	66.2
1927	176.9	132.40	71.1
1928	202.0	133.37	67.8
1929	192.0	110.00	68.2
1930	217.4	91.28	68.5
1931	227.0	126.09	66.0
1932	194.2	123.96	65.8
1933	188.2	136.16	68.2
1934	208.0	120.25	66.4
1935	187.2	133.50	69.8
1936	130.9	105.14	64.6

Year	Pagopago	Apia	Apia
1937	144.9	111.60	68.5
1938	172.9	139.47	69.3
1939	208.3	151.18	66.9
1940	173.2	78.44	68.7
1941	130.3	80.49	68.2
1942	-	107.12	68.2
1943	-	79.35	68.0
1944	-	108.39	68.2
1945	-	127.51	68.0
1946	-	121.98	66.5
1947	223.1	127.79	67.1
1948	253.8	141.48	66.5
1949	313.2	114.66	65.9
1950			

APPENDIX III, A, ii

METEOROLOGICAL DATA.

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	WHOLE YEAR
Temperature Average:													
DRY, NORTH WEST SIDE:													
W.Samoa .. Apia	79.5	79.5	79.5	79.9	78.9	78.3	77.7	78.2	78.5	79.0	79.1	79.5	79.9
Fiji .. Lautoka	80.6	81.4	80.6	79.7	77.8	75.8	75.0	75.6	76.0	77.8	79.1	79.7	78.3
WET, SOUTH EAST SIDE:													
W.Samoa .. Lotofaga	–	–	–	–	–	–	–	–	–	–	–	–	–
Fiji .. Suva	80.1	80.5	80.2	78.8	76.7	74.9	73.6	78.7	74.5	76.0	87.4	78.9	77.1
HILL, 2,000 FEET:													
W.Samoa .. Afiamalu	–	–	–	–	–	–	–	–	–	–	–	–	–
Fiji .. Nadarivatu	70.4	72.0	71.1	69.9	68.2	66.1	65.3	65.6	65.1	67.9	68.6	69.9	68.3
Temperature Maximum:													
DRY, NORTH WEST SIDE:													
W.Samoa .. Apia	91	92	91	91	90	90	91	90	90	91	93	91	93
Fiji .. Lautoka	95	97	95	94	95	91	89	90	94	94	93	96	97
WET, SOUTH EAST SIDE:													
W. Samoa .. Lotofaga	–	–	–	–	–	–	–	–	–	–	–	–	–
Amer.Samoa. Vailoatai	94	93	92	96	94	91	90	89	88	88	90	89	94
Fiji .. Suva	96	97	98	94	93	90	90	90	90	93	93	97	98
HILL, 2.000 FEET:													
W.Samoa .. Afiamalu	–	–	–	–	–	–	–	–	–	–	–	–	–
Fiji .. Nadarivatu	84	85	85	83	80	80	80	80	80	82	80	81	85

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	WHOLE YEAR.
Temperature Minimum:													
Fiji .. Nadaruvatu	51	58	56	53	53	50	45	46	53	53	54	50	45
Humidity Minimum (Always 100 at night.)													
WET, SOUTH EAST SIDE:													
Amer. Samoa. Vailoatai	57	63	60	57	55	60	53	65	56	60	60	63	53
Rainfall average for month:													
DRY, NORTH WEST SIDE:													
W.Samoa .. Apia	17.76	14.89	13.71	9.77	6.53	4.98	3.47	3.79	5.54	7.17	10.38	14.02	112.00
Amer.Samoa. No station on N.W.Side.													
Fiji .. Lautoka	12.64	14.16	13.88	8.55	4.73	2.12	1.79	1.82	2.87	3.58	5.76	9.95	81.82
WET, SOUTH EAST SIDE:													
W.Samoa .. Lotofaga	22.57	12.13	13.53	12.05	12.06	8.41	8.29	12.17	11.76	16.87	13.79	16.04	159.67
Amer.Samoa Pagopago	23.6	21.5	20.1	15.9	16.9	12.3	10.5	9.0	13.0	15.4	19.1	21.7	196.6
Amer.Samoa Airfield	13.1	10.1	10.9	9.1	12.0	14.4	6.7	6.7	11.3	11.2	20.9	18.1	144.5
Tafuna,1942-46.													
Amer.Samoa Vailoatai	11.9	16.2	15.4	8.0	18.9	7.2	5.9	11.9	7.9	20.1	11.8	22.5	142.9
Fiji .. Suva	11.69	11.13	14.73	12.90	10.67	6.33	5.41	8.14	7.87	8.96	10.24	12.79	120.86
HILL, 2,000 FEET:													
W.Samoa .. Afiamalu	29.69	30.39	21.18	16.50	9.69	6.81	5.04	6.26	8.43	8.90	18.47	19.84	181.20
Fiji .. Nadarivatu	21.56	25.06	24.69	12.51	7.28	3.74	3.56	5.19	4.73	5.38	7.83	16.12	137.63

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	WHOLE YEAR.
Rainfall minimum for month:													
DRY, NORTH WEST SIDE:													
W. Samoa .. Apia	3.31	3.54	3.33	1.80	0.39	0.65	0.11	0.08	0.20	1.22	1.47	4.02	69.50
Fiji .. Lautoka	2.19	0.75	2.72	1.63	0.49	0.03	0.05	0.30	0.10	0.02	0.01	1.30	37.01
WET, SOUTH EAST SIDE:													
W. Samoa .. Lotofaga	3.70	7.01	5.62	4.80	10.15	6.47	8.63	6.70	3.76	8.81	9.72	12.72	143.25
Amer. Samoa. Vailoatai	8.9	14.7	11.6	7.0	10.8	4.3	2.4	9.3	2.5	10.8	10.6	13.1	–
Amer. Samoa. Airfield	9.1	8.2	6.4	7.2	7.8	2.3	2.8	1.5	9.2	6.6	5.0	11.2	116.6
Fiji .. Suva	2.27	4.10	4.48	3.35	1.80	1.01	0.29	0.88	0.11	0.51	0.53	3.29	73.08
HILL, 2,000 FEET:													
W. Samoa .. Afiamalu	–	–	–	–	–	–	–	–	–	–	–	–	–
Fiji .. Nadarivatu	3.07	4.66	6.46	1.89	0.51	0.12	0.09	0.02	0.63	0.49	0.05	5.87	74.33
Rainfall maximum for month:													
DRY, NORTH WEST SIDE:													
Fiji .. Lautoka	25.0	41.5	30.9	17.5	11.2	8.5	8.3	12.3	9.1	8.9	12.3	21.7	109.4
WET, SOUTH EAST SIDE:													
Amer Samoa. Pagopago	65.5	48.3	52.9	31.9	60.5	49.2	38.3	23.6	48.9	49.2	41.7	56.7	313.2
Amer. Samoa. Airfield	19.1	13.4	19.1	13.0	16.3	34.7	11.9	12.7	15.8	18.9	45.1	29.0	209.2
Fiji .. Suva	31.6	21.5	29.5	33.1	25.6	25.1	18.5	37.3	16.8	27.3	29.3	39.5	170.74
HILL. 2,000 FEET:													
Fiji .. Nadarivatu	67.6	96.7	55.8	39.2	26.1	12.9	14.1	24.0	15.5	16.2	18.5	61.1	332.4

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	WHOLE YEAR.
Rainfall maximum for one day:													
DRY, NORTH WEST SIDE:													
W. Samoa .. Apia	15.95	–	10.35	9.57	7.18	–	3.05	8.08	5.23	–	9.95	10.24	..
Fiji .. Lautoka	7.30	5.05	8.70	7.51	4.27	3.54	4.78	3.21	5.93	5.01	5.08	7.00	8.70
WET, SOUTH EAST SIDE:													
W. Samoa .. Lotofaga	5.10	9.16	3.36	3.35	13.29	7.71	4.48	5.66	6.03	8.66	4.64	5.10	13.29
Amer. Samoa. Vailoatai	3.7	3.4	4.8	2.1	4.5	2.3	2.7	4.5	5.7	6.1	2.9	5.3	5.3
Fiji .. Suva	3.42	11.10	4.53	7.48	4.53	2.41	1.34	2.14	8.43	2.95	6.79	4.30	11.10
HILL, 2,000 FEET:													
W. Samoa .. Afiamalu	–	–	–	–	–	–	–	–	–	–	–	–	–
Fiji .. Nadarivatu	20.00	24.20	12.62	13.00	10.50	5.26	5.40	13.10	5.85	4.40	6.56	5.02	24.20
Rainfall maximum for one hour:													
DRY, NORTH WEST SIDE:													
W. Samoa .. Apia (From 1932)	3.36	1.54	2.93	1.43	2.04	1.52	1.61	1.35	2.56	2.18	3.06	3.03	3.36
Sunshine hours per month:													
DRY, NORTH WEST SIDE:													
W. Samoa .. Apia–Maximum	245.8	221.0	259.2	265.8	274.7	272.0	302.1	291.5	297.6	288.8	256.1	237.5	2,823.5
Average	177.7	161.7	200.8	209.5	222.8	224.8	244.3	248.1	233.7	228.5	201.7	182.3	2,536.0
Minimum	82.3	102.7	138.1	158.8	141.1	147.9	200.0	219.1	174.5	185.7	99.4	159.1	2,298.0

APIA, 1945-1949.

	1945.	1946.	1947.	1948.	1949.
Total Rainfall ..	127.46 inches	121.98 inches	127.79 inches	141.48 inches	114.66 inches
Number of rain days..	228	198	222	238	238
Maximum daily rainfall.	4.30 in.	6.02 in.	8.64 in.	4.98 in.	4.31 in.
Date	15th March	18th May	6th January	4th December	30th December
Extreme maximum temperature	89.6°F.	90.0°F.	91.0°F.	32.9°F.	89.9°F.
Date	6th April	12th April	19th March	17th January	25th March
Extreme minimum temperature	68.0°F.	66.5°F.	67.1°F.	66.5°F.	65.9°F.
Date	16th August	19th July	25th August	23rd August	23rd July
Mean daily maximum "	85.31°F.	86.57°F.	86.7°F.	86.5°F.	85.7°F.
Mean daily minimum temperature	74.8°F.	74.04°F.	74.2°F.	73.7°F.	73.7°F.

A P P E N D I X IV.

LUMBER IMPORTS.

I) NAVY FIGURES.

II) PRIVATE FIGURES.

III) TOTAL FIGURES.

APPENDIX IV A

(i) LUMBER IMPORTS, NAVY, ALL FROM U. S. A.

	1947		1948		1949		1950	
	B.Ft.	$	B.Ft.	$	B.Ft.	$	B.Ft.	$
White Oak							5,300	1,434
White Ash					1,500	795		
Cypress					1,944	389		
Sugar Pine					864	216		
Siding, drop.	80,580	5,641			9,344	1,635		
Creosoted	15,460	1,005	7,384	369				
Flooring, T.& b.	52,690	3,161	12,000	1,830				
Douglas			25,581	1,411	96,657	5,900	4,869	219
Constructional	17,003	976	168,681	10,372	198,320	9,883	153,822	7,058
Total Timber	165,733	10,783	213,646	13,982	308,629	18,818	163,991	8,711
Plywood	2,672	64	28,800	4,687	106,424	14,926	2,400	300

(ii) TIMBER IMPORTS, CIVILIAN

YEAR	COUNTRY OF ORIGIN							
	U.S.A.		Australia or New Zealand		Other British		Total	
	B.Ft.	$	B.Ft.	$	B.Ft.	$	B.Ft.	$
1931	120,672	3,439	32	4	667	58	121,371	3,501
1932	183,186	5,991	78	7	3,004	235	186,268	6,233
1933	203,291	3,359	1,791	194	2,040	463	207,122	4,016
1934	No Records							
1935	127,320	4,516					127,320	4,516
1936	153,392	6,302					153,392	6,302
1937	125,367	7,185	138	14	21,582	728	147,087	7,927
1938	84,332	4,074	33	6			84,365	4,080
1939	156,832	6,396	294	25			157,126	6,421
1940	83,143	3,550	3,439	273	3,706	71	90,288	3,894
1941	67,520	4,407	544	88			68,064	4,495
1942	30,926	1,704					30,926	1,704
1943	5,382	478					5,382	478
1944	147,316	17,362					147,316	17,362
1945	182,000	15,046	3,250	521			185,250	15,567
1946	36,000	3,255	4,000	475			40,000	3,730
1947	626,550	21,581					626,550	21,581
1948	97,360	17,290					97,360	17,290
1949	371,208	33,737	1,009	117			372,217	33,854
1950	114,703	12,714	1,264	216			115,967	12,930

APPENDIX IV A

(iii) LUMBER IMPORTS OF WHICH RECORDS ARE AVAILABLE.

YEAR ENDING 30 JUNE.

Year.	Volume			Value $		
	Navy	Civil	Total	Navy	Civil	Total
1931		121,371			3,501	
1932		186,268			6,233	
1933		207,122			4,016	
1934		-			-	
1935		127,320			4,516	
1936		153,392			6,302	
1937		147,087			7,927	
1938		84,365			4,080	
1939		157,126			6,421	
1940		90,288			3,894	
1941		68,064			4,495	
1942		30,924			1,704	
1943		5,382			478	
1944		147,314			17,362	
1945		185,250			15,567	
1946		40,000			3,730	
1947	165,733	626,550	792,283	10,783	21,581	32,364
1948	213,646	97,360	311,006	13,982	17,290	31,272
1949	308,629	372,217	680,846	18,818	33,854	52,672
1950	163,991	115,967	279,958	8,711	12,930	21,641

APPENDIX M.

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A P P E N D I X VI.

SAMPLE PLOT NO. I

I) REASONS AND INSTRUCTIONS

II) POSITION OF TREES

III) MEASUREMENT OF TREES

APPENDIX VI. (i)

Sample Plot I.

REASONS AND INSTRUCTIONS.

This Sample Plot was established for three reasons:-

Firstly to enable an estimate to be made of the size, height and volume of trees in an area of average poor lowland forest.

Secondly to have a definite record of the sizes of selected trees to enable any Agricultural or Forest Officer in the future, to take further measurements and ascertain the rate of growth of local species.

Thirdly to demonstrate to the Samoan agricultural students, what the writer was doing and why.

The area selected is in the section of land acquired by the U. S. Government as an airfield. The future of this area has not yet been decided, but the writer has recommended elsewhere in this report that the land should be acquired permanently.

Selected trees have been marked by nailing small numbered copper plates on to the trees, at about 15 feet above ground level. This great height was suggested by the Samoan agricultural students, as they considered that if the tabs could be reached easily, they would certainly be destroyed by suspicious ignorant villagers, some of whom frustrated an attempt to carry out a complete enumeration survey of a neighbouring proposed one acre sample plot, by felling a number of the trees it contained after demarcation was completed.

The plot should be measured by the Agricultural Students annually within two weeks of the date of the original measurements. Girth is

measured at Breast Height; 4 foot 6 inches above ground level.

The system of carrying out a complete enumeration was explained to the Director of Agriculture, Mr. D. Butchart, and the Agricultural students. They will carry out a sample enumeration in neighbouring forest when they have the spare time.

Appendix VI (II)

POSITION OF TREES IN SAMPLE PLOT NO. I.

Magnetic Declination:- 11° 26' E.

Tree Number	Distance along Base. (feet)	Offset Distance (feet)	Tree Number	Distance along Base. (feet)	Offset Distance (feet)
101	74	Nil R	111	A 93	33 L
102	127	13 L	112	B 119	29 L
103	149	Nil L	113	B 166	31 L
104	169	38 L	114	B 166	56 L
105	199	41 R	115	B 213	56 L
106	199	97 R	116	B 230	Nil L
107	255	26 L	117	B 217	56 R
108	293	Nil R	118	B 180	12 R
109	325	92 R	119	C 70	12 R
110	330	30 R	120	70	48 L

Appendix VI (III).

RECORD OF HEIGHT AND GIRTH MEASUREMENTS.

Sample Plot No. I - Tutuila Airport.

Tree No.	Native Name.	Scientific Name.	Girth in feet and inches Height in feet (estimated) Length of clear bole (estimated) on:- 6/Sept/1950	/ /19	/ /19
101	Mamalava	Sideroxylon sp. ?	4' 7" 64 48		
102	Toi	Alphitonia zizyphoides	4' 1" 52 40		
103	Mamalava	Sideroxylon sp. ?	5' 4" 64 54		
104	Ala'a	Chariessa samoensis ?	4' 4" 45 22		
105	Fua fua	?	6' 4" 58 38		
106	Talie	Terminalia catappa	7' 10" 65 35		
107	Maso'oi	Canagium odoratum	2' 9" 65 59		
108	Maso'oi	Canagium odoratum	2' 9" 64 57		
109	Tavai	Rhus taitensis	4' 4" 68 28		
110	Mamalava	Sideroxylon sp. ?	2' 11" 57 22		
111	Vivai	Reynoldsia sp.	4' 8" 63 25		
112	Ala'a	Planchonella carberi ?	3' 8" 59 38		
113	Mamalava	Sideroxylon sp. ?	4' 0" 59 39		
114	Mamalava	Sideroxylon sp. ?	6' 7" 67 40		
115	Mamalava	Sideroxylon sp. ?	5' 4" 66 47		
116	Tavai	Rhus taitensis	2' 5" 44 20		
117	Mamalava	Sideroxylon sp. ?	6' 9" 69 40		
118	Asi	Syzygium sp.	4' 0" 64 33		
119	Mamalava	Sideroxylon sp. ?	6' 0" 66 41		
120	Mamalava	Sideroxylon sp. ?	3' 6" 54 37		
			92' 2" 763		
TOTAL:			1,213		
AVERAGE:			4' 7" 61 38		

NOTES: